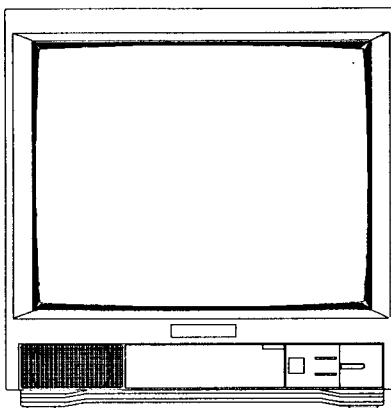


SERVICE MANUAL

MODEL: CX5012Z/SGX

CHASSIS: P-58SC & RM109

COLOUR TELEVISION RECEIVER



CX5012Z

SPECIFICATION

Television System	PAL - B/G , SECAM - B/G
Receiving Channel	VHF : 2 - 12 UHF : 21 - 69
Intermediate Frequency	Picture I-F Frequency : 38.9MHz Sound I-F Carrier Frequency : 33.4MHz Colour Sub-carrier Frequency : 34.47MHz
Picture Tube	51GGB91X
Power Requirements	220V , 50Hz
Power Consumption	83 WATT
Speaker	Impedance : 8 Ohm , 3W
Features	P58SC & RM109 REMOCON SYSTEM

SAFETY CAUTION :

Before servicing this chassis, it is important that a service technician reads and follows the "Safety Precaution" and "Product Safety Notice" in this Service Manual.

- * For continued X-radiation, replaced the picture tube with original type.
- * Design and specifications are subject to change without prior notice.
- * **WARNING-SHOCK HAZARD** - use isolation transformer when servicing.

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PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by visual inspection and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The replacement parts which have these special safety characteristics are identified in this manual and

supplements; electrical components having such features are identified.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute parts which do not have the same safety characteristics in the parts list may create a shock, fire, X-radiation or other hazards.

SERVICE NOTES

1. When replacing the parts or the circuit boards, lamp the lead wires to the terminals before soldering.
2. When replacing a high wattage resistor (oxide metal film resistor) in the circuit board, keep the resistor 10mm (1/2 in.) away from the circuit board.
3. Keep the wires away from high voltage or high temperature components.
4. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.

X-RADIATION PRECAUTION

1. The excessive high voltage can produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 24.5Kv at zero beam current (minimum brightness). The high voltage must not, under any circumstances, exceed 25.5KV. Each time a receiver requires servicing, so the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended that the reading of the high voltage should be recorded as a part of the service record.

It is important to use an accurate and reliable high voltage meter.

2. The only source of X-RADIATION this TV receiver is the picture tube. For continued X-RADIATION protection, the replacement tube must be exactly the same type as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RADIATION protection. For continued safety, the parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE.

SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary precautions in this receiver. The following are the necessary precautions to be observed before servicing.

Since the chassis of this receiver is directly connected to the AC power line-(Hot chassis), an isolation transformer should be used during any dynamic service to avoid a possible shock hazard.

1. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, the glass fragments will be violently expelled.
2. Use the shatterproof goggles and keep the picture tube away from the bare body while handling. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, covers, shields, isolation resistor- capacitor network, etc.

3. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminal, screeheads, metal overalls, control shafts, etc. To be sure that the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohm per volt or more sensitivity in the following manner. Connect a 1500 ohm 10watt resistor, paralleled by a 0.15uF, AC type capacitor, between a known good earth ground (water pipe, conduit etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and 0.15uF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. The voltage measured must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

LOCATION OF CONTROLS

1. MASTER SWITCH ()

Press the master switch on the set. Then you will see the light of stand-by indicator located in the front pannel of the set.

Note: When you leave the house for a long period of time, turn off the master switch.

2. CHANNEL/PROGRAMMING UP or DOWN (- C/P +)

Press once to increase or decrease the programme position.

When the TV set is in the stand-by mode, the TV set will be turned on whether you press button up/down.

3. VOLUME UP or DOWN (- +)

Press the '+' button to increase the sound.

Press the '-' button to decrease the sound.

4. MANUAL TUNING UP or DOWN (MT + , - MT)

Normally the manual tuning is not needed, but it can be useful under the extreme (poor) signal conditions (E.G. when search-tuning fails).

During the manual tuning, the OSD will show the followings:

- the current selected with an analogue indication.
- "TUNE", together with an analogue indication.
- a tuning bar that indicates the position in the band.

Automatic following is suspended until the message has forded away.

5. PICTURE MODE COMMAND ()

The "PICTURE" command will make the following procedures rotate automatically:

BRIGHT --- > COLOUR --- > CONTRAST --- > VOLUME --- > BRIGHT.

Any of those picture modes above can be changed by pressing volume up/down button.

6. SEARCH UP BUTTON ()

To start the search, the user has to press this "SEARCH" button. The OSD will show the currently selected band and analogue indication bar.

When the tuning reaches the top of a band, it will change to the next higher band.

To speed up the search, this set has a possibility to change quickly to search the next band. If a user presses his "SEARCH" button and keeps it pressed for 3 seconds, the system will change to the next band. Keeping the key pressed be will get a new band every second.

7. STORE ()

Memory requires levels of COLOUR, BRIGHT, CONTRAST, VOLUME and program number.

8. CLEAR (X)

Reset all the levels of analogue controls and erase the undesired program numbers.

9. PERSONAL PRESET ()

The personal preset can be stored the analogue states (Colour, Bright, Contrast, volume).

The personal preset button can be pressed to memorize the analogue states.

10. SLEEP TIMER ()

The TV set maybe pre-set to switch off after a fixed period. When pressing the "SLEEP" key for the first time, the OSD will display the remaining minutes during 3 seconds while the function is visible. Each pressing of the "SLEEP" key will increment the time by 15 minutes, up to two hours.

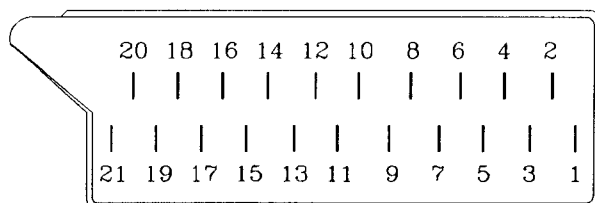
--- > OFF --- > 15 --- > 30 --- > 45 --- > 60 --- > 75 --- > 90 --- > 105 --- > 120

When the sleep timer function is activated, the television will be placed in stand-by after the selected time

PIN CONNECTION OF EURO-AV SOCKET

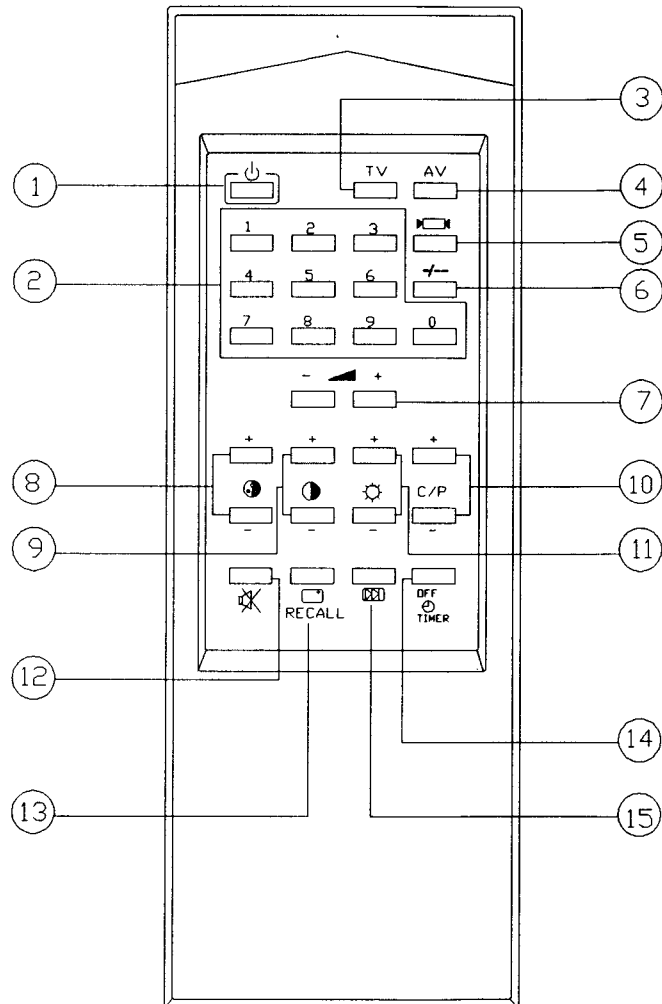
If you wish to connect peripheral equipment to your TV set, your dealer will be able to make the correct standard connections using the table below.

PIN	SIGNAL
1	Audio output R
2	Audio input R
3	Audio output L
4	Audio chassis return
5	Video chassis return(R,G,B blue)
6	Audio input L
7	R, G, B blue input
8	Switching pin
9	Video chassis return(R,G,B green)
10	---
11	R, G, B green input
12	---
13	Video chassis return(R,G,B red)
14	---
15	R, G, B red input
16	Blanking signal(R,G,B switching)
17	Video chassis return
18	Blanking signal ground
19	Video output
20	Video input
21	Screening/chassis return

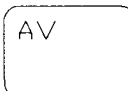
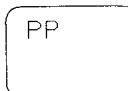
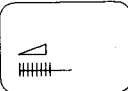
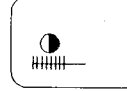
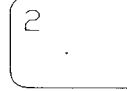
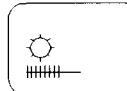
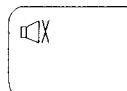


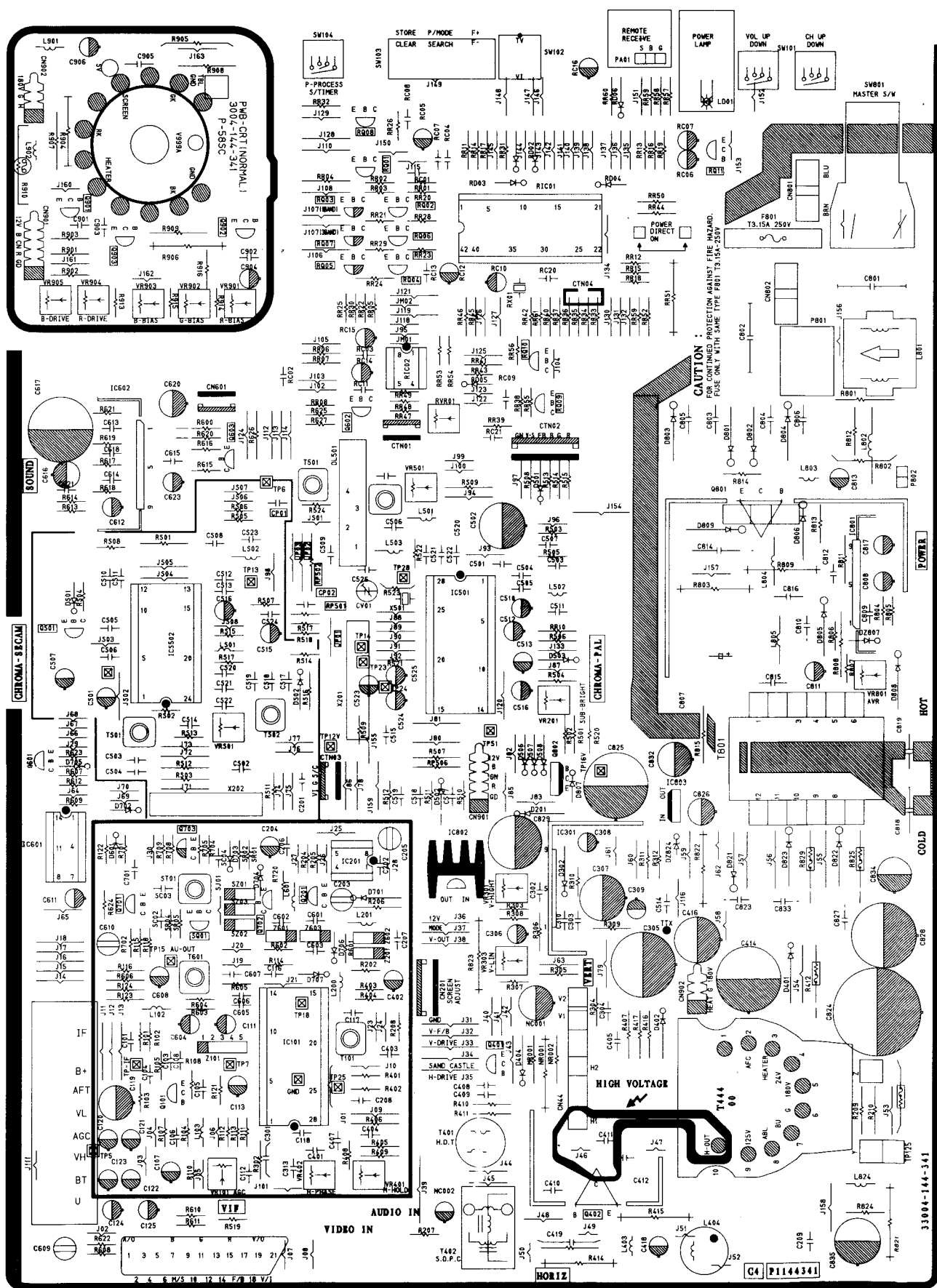
OPERATION WITH THE TRANSMITTER

Once the "MASTER SWITCH" has been switched ON, you can control the receiver using the "REMOTE CONTROL TRANSMITTER" anywhere up to 6 meters away from the receiver.



REMOTE CONTROL OPERATION

- 1** **STAND-BY** ()
Press this button to turn off the TV set for a short period.
- 2** **DIRECT PROGRAMMING SELECTION**
Press these buttons to select the positions. And to start on directly, push one of the '0 - 9' keys.
- 3** **TV SELECTION** (TV)
One depression makes the mode change from VIDEO mode to TV mode. 
- 4** **AV SELECTION** (AV)
One depression makes the mode change from TV mode to VIDEO mode. 
- 5** **PERSONAL PRESET** ()
The personal preset can store the analogue states (Colour, Bright, Contrast, Volume). 
- 6** **SINGLE/DUAL DIGIT** (- / --)
Press this button to select doubled figure programming position (10 - 39). 
- 7** **VOLUME UP/DOWN** (-  +)
Press the '+' button to increase the sound. Press the '-' button to decrease the sound. 
- 8** **COLOUR UP/DOWN** (-  +)
Press the '+' button to increase the colour level. Press the '-' button to decrease the colour level. 
- 9** **CONTRAST UP/DOWN** (-  +)
Press the '+' button to increase the contrast level. Press the '-' button to decrease the contrast level. 
- 10** **CHANNEL PROGRAMMING SELECTION** (- C/P +)
Press these buttons to select the channel programming position, and to start on directly. 
- 11** **BRIGHTNESS UP/DOWN** (-  +)
Press the '+' button to increase the brightness. Press the '-' button to decrease the brightness. 
- 12** **MUTE** ()
Press this button to mute the sound. 
- 13** **RECALL** ()
Press this button to turn on the TV set, and it will recall the last channel position before you turn off.
- 14** **OFF TIMER** ()
This feature enables your TV set to be turned off after a certain period of time you set.
- 15** **SEARCH UP** ()
This button will automatically search up the signals you want.



INSTALLATION AND SERVICE ADJUSTMENTS

1. GENERAL INFORMATION

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore, the receiver should operate normally and produce proper colour and B/W picture upon installation. However minor service adjustments may be required depending on the particular location in which the receiver is operated. This receiver is shipped completely in cardboard carton. Carefully draw out the carton and remove all the packing materials.

Plug the power cord into a convenient two pin power outlet. Turn on the receiver and adjust the fine tuning for the best picture detail.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain the natural colour or B/W

2. AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussing upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized and cause the poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the face-plate of the picture tube, the sides and the rear of the receiver and slowly withdraw the coil to distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures as mentioned later.

3. HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis. But B+ power must be adjusted in +125V under the full colour bar pattern and the normal picture control level.

- 1) Connect an accurate high voltage meter to the second anode of the picture tube.
- 2) Turn on the receiver. Set the BRIGHTNESS and CONTRAST control to minimum (zero beam).
- 3) The high voltage should be measured less than 25KV.

- 4) Rotate the BRIGHTNESS and CONTRAST controls to both extremes to be sure that the high voltage does not exceed the limit of 25.5KV under any conditions.

4. + B (+ 125V) ADJUSTMENT

- 1) Receive the lion-head pattern.
- 2) Set the Bright and Contrast condition to maximum.
- 3) Connect Digital voltmeter to R821.
- 4) Adjust the VR801 to + 125V.

5. HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync, adjust the HORIZONTAL HOLD control (VR401) to remove the condition. When you adjust the Horizontal Hold control, you should short TP25 and GND for the H-oscillator adjustment.

6. HORIZONTAL PHASE ADJUSTMENT

If you want to move the center of picture, adjust HORIZONTAL phase control (VR402).

7. VERTICAL HEIGHT ADJUSTMENT

The SIZE control (VR301) on the main board changes the size of the picture, having an equal effect on the top and bottom.

8. FOCUS ADJUSTMENT

- 1) Set the Bright and Contrast condition to maximum.
- 2) Adjust FOCUS Control on FBT for well defined scanning lines in the centre area of the screen.

9. R-F AGC ADJUSTMENT

- 1) Turn the set in the strongest station in your area.
- 2) Turn AGC control (VR101) on the IF board fully clockwise position.
- 3) Adjust AGC control until noise (snow) disappears from the screen.

10. APC ADJUSTMENT

- 1) Receive the colour bar pattern.
- 2) Connect TP23 to TP24 with jumper.
- 3) Control the Trimer CV101 on the main PCB to get the colour.

11. COLOUR PURITY ADJUSTMENT

NOTE: Before attempting any purity adjustments, the receiver should be operated for at least fifteen minutes. The purity adjustment requires Rubber Wedge kit.

- 1) Demagnetize the picture tube and cabinet using a degaussing coil.
- 2) Turn the CONTRAST and BRIGHTNESS controls to maximum.
- 3) Receive the green colour pattern.
- 4) Loosen the clamp holding the yoke, and slide the yoke backward or forward to provide the vertical green belt(zone) in the picture screen.
- 5) Remove the Rubber Wedges.
- 6) Rotate and spread the tabs of the purity magnet(See Fig. 3) around the neck of the picture tube until a green belt is obtained in the centre of the screen.
And at the same time, centre the raster vertically by adjusting the magnet.
- 7) Move the yoke slowly forward or backward until a uniform red screen is obtained. Tighten the clamp screw.
- 8) Check the purity of the red and blue raster.
- 9) Tighten the clamp screw of the yoke temporarily.
- 10) Obtain a white raster referring to "CRT WHITE BALANCE ADJUSTMENT".
- 11) Proceed with the convergence adjustment.

12. WHITE BALANCE ADJUSTMENT

1) PREPARATION

- 1 Operate the receiver at least 20 minutes before attempting the white balance adjustment.
- 2 Connect A.C. line and the receiver power switch sets in "ON" position.
- 3 Receive a black and white signal (Lion head pattern is better).
- 5 Set colour control to the center position. Set the brightness and contrast controls to the "PP" position.
- 6 Set the red, blue and green drive controls to the mechanical center position.
- 7 Set the blue and green drive controls to the mechanical center position.
- 8 Set the screen VR control on FBT to the minimum position (fully counter-clockwise).

2) STEPS

- 1 Rotate the SCREEN control on FBT(T444) gradually clockwise until the first horizontal line appears slightly on the screen.
- 2 Adjust the two CUT_OFF controls to obtain the slightly lighted horizontal line in the same levels of three colours (red, green and blue). The line looks like white if the CUT-OFF controls are adjusted properly.
- 3 Adjust the blue and green drive controls to obtain the proper white-balanced picture in high light areas.
- 4 Set the contrast control to the minimum position and turn the brightness control slightly counterclockwise to obtain a dark gray raster. Then check the white balance in low brightness. If the white balance is not enough, repeat the steps (1 - 4) for correct white balance.

13. CONVERGENCE ADJUSTMENT

NOTE: Before attempting any convergence adjustment, the receiver should be operated at least for fifteen minutes.

Centre Convergence Adjustment

- 1) Receive crosshatch pattern with a colour bar signal generator.
- 2) Adjust the BRIGHTNESS and CONTRAST Controls for a well defined pattern.
- 3) Adjust the two tabs of the 4-pole Magnets to change the angle between them(See Fig. 2) and superimpose the red and blue vertical lines in the centre area of the picture screen(See Fig. 2).
- 4) Turn the both tabs while at the same time keeping the angle constant and superimpose the red and blue horizontal lines at the centre of the screen(See Fig. 3).
- 5) Adjust two tabs of 6-pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the horizontal lines.
- 6) Due to the interaction between these adjustments, steps 3, 4 and 5 should be repeated until the satisfactory results are obtained.

CIRCUMFERENCE CONVERGENCE ADJUSTMENT

- 1) Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
- 2) Put a wedge as shown in Fig. 1 temporarily (Do not remove cover paper on adhesive part of the wedge).
- 3) Tilt the front of the deflection yoke up or down to obtain the better convergence in circumference (See Fig. 3). Push the mounted wedge into the space between the picture tube and yoke to fix the yoke temporarily.
- 4) Put other wedge into the bottom space and remove the cover paper to stick.
- 5) Tilt the front of the yoke right or left to obtain the better convergence in circumference (See Fig. 4).
- 6) Keep the yoke position and put another wedge in either upper space. Remove the cover paper and stick the wedge on picture tube to fix the yoke.
- 7) Detach the temporarily mounted wedge and put it in another upper space. Stick it on this picture tube to fix the yoke.
- 8) After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check if the yoke is firm.
- 9) Stick 3 adhesive tabs on the wedges as shown in Fig. 1.

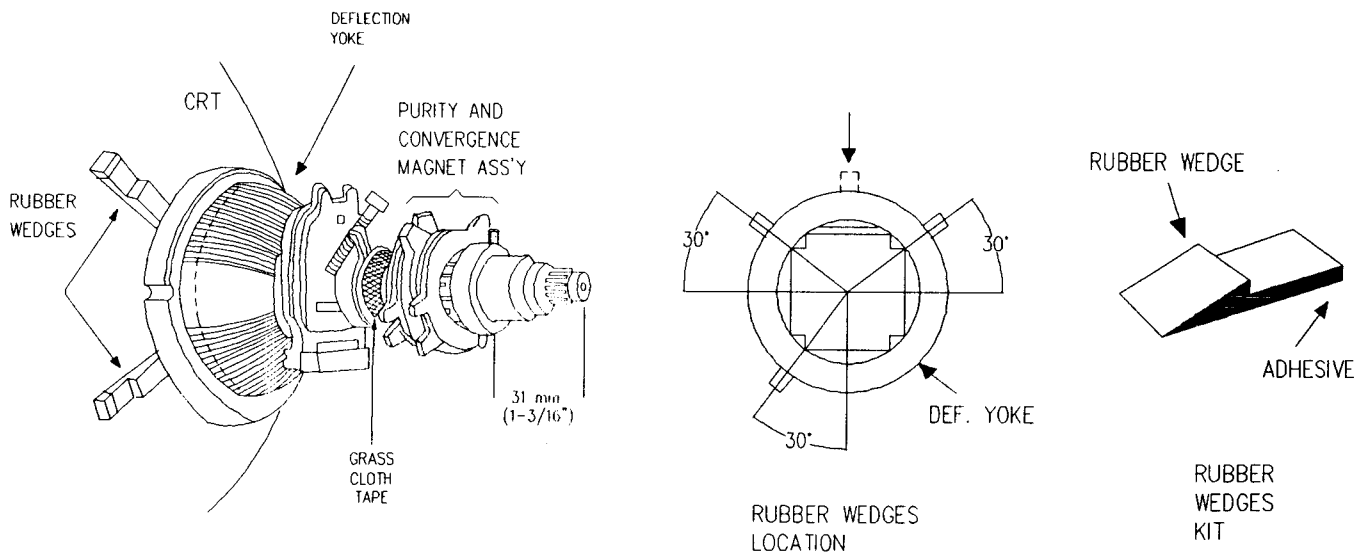


Figure 1 TUBE ASSMEBLY

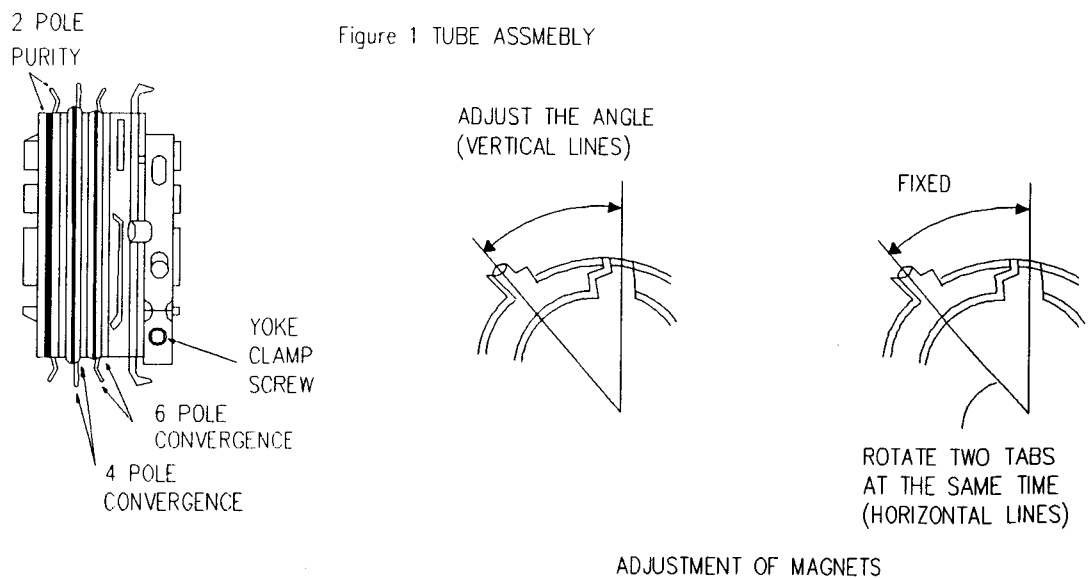
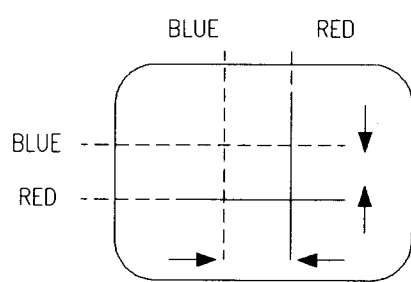
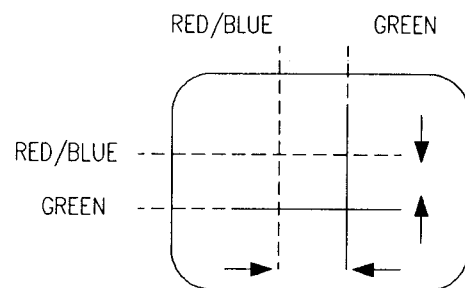


Figure 2 PURITY AND CONVERGENCE MAGNETS

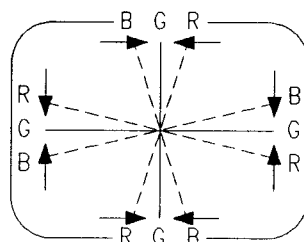


4-POLE MAGNETS MOVEMENT

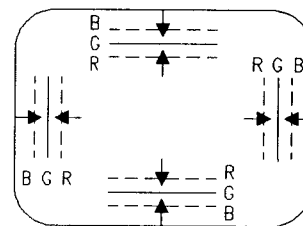


6-POLE MAGNETS MOVEMENT

Centre Convergence by Convergence Magnets



INCLINE THE YOKE UP (OR DOWN)



INCLINE THE YOKE RIGHT (OR LEFT)

Circumference Convergence by DEF. Yoke

Figure 3. DOT MOVEMENT INSTRUCTIONS

GENERAL ALIGNMENT INSTRUCTIONS

A. GENERAL

The alignment is an exacting procedure and should be undertaken only when necessary. The test equipment specified or its equivalent is required to properly perform the alignment procedures which are outlined on the following pages. The use of equipment which does not meet these requirements may result in the inability to properly align the receiver.

It is essential that bias values as specified are maintained while the alignment to insure proper results.

B. EQUIPMENT TERMINATIONS

The alignment pads are designed for correct matching of the equipment to the circuits involved. The failure to the proper matching will result in representing the true operation of thereceiver. The pads should be constructed as compactly as possible with all unshielded leads not being in excess of 2.5cm long.

C. SIGNAL OVERLOAD

Since the large excessive of the sweep generator causes the overloading of receiver circuits, first, the output of the sweep generator set to zero and then gradually increase the output until a reponse is obtained. Further increase changes in configuration, for example, flattening at the top or dropping below the base line at the bottom, decrease the sweep output to restore the proper configuration. The oscilloscope gain should be as high as possible to maintain a useable pattern with the peak-to-peak values specified, thus requiring a lower output from the sweep generator and less change of overload. Insertion of makers from the marker generator should not cause the distortion of the response.

D. TEST EQUIPMENTS

- 1) PAL PATTERN GENERATOR (PM5518)
- 2) OSCILLOSCOPE
- 3) DC POWER SUPPLY (DC range:0-10V,0-20V)
- 4) MATCHING PAD
- 5) PROBE (which impedance is 75 ohm)
- 6) DIGITAL VOLTMETER
- 7) BNC TO DIN JACK
- 8) BNC TO BNC CABLE

1. VIF (AFT) ALIGNMENT

1.1 EQUIPMENT

- 1) Pattern generator (PM5518)
- 2) DC power supply
- 3) Digital Voltmeter

1.2 SETTING

- 1) PM5518: Multiburst pattern 38.9MHz
- 2) DC power supply: 12V
- 3) Digital Voltmeter: 10V range

1.3 PREPARATION

- 1) Connect DC power supply to TP-12 of the Main PCB
- 2) Connect Digital Voltmeter to TP-18 of the Main PCB
- 3) Connect RF out of PM5518 to TP-1F of the Main PCB

1.4 STEPS

- 1) Adjust the T101 until the Digital Voltmeter is to be 6V.

2. SOUND (5.5MHz DET) ALIGNMENT

2.1 EQUIPMENT

- 1) Digital Voltmeter

2.2 SETTING

- 1) Digital Voltmeter: 12V range

2.3 PREPARATION

- 1) Receive the colour bar pattern and insert 1KHZ modulated Sound Carrier
- 2) Connect the Digital Voltmeter to AU-OUT

2.4 STEPS

- 1) Adjust the T601 until the Digital Voltmeter is to be $2.8 \pm 0.1V$.

3. SECAM COLOUR ALIGNMENT

- PREPARATION** — 1. Setting the trigger mode of the Oscilloscope to EXT. mode, hold the sync. using the induced horizontal voltage.
2. Set the time division of the scope to 20 $\mu s/cm$.
 3. Set the Vert. Gain to 0.1V/cm.
 4. receive SECAM colour pattern.
 5. The Colour, Brightness, and Contrast control to the maximum position.

3.1 BELL FILTER ALIGNMENT

- 1) Connect the probe (10:1) of the scope to ICS502 "4" pin.
- 2) Adjust TS01 so that each bar of (R-y) and (B-Y) becomes even respectively (Fig. 1).

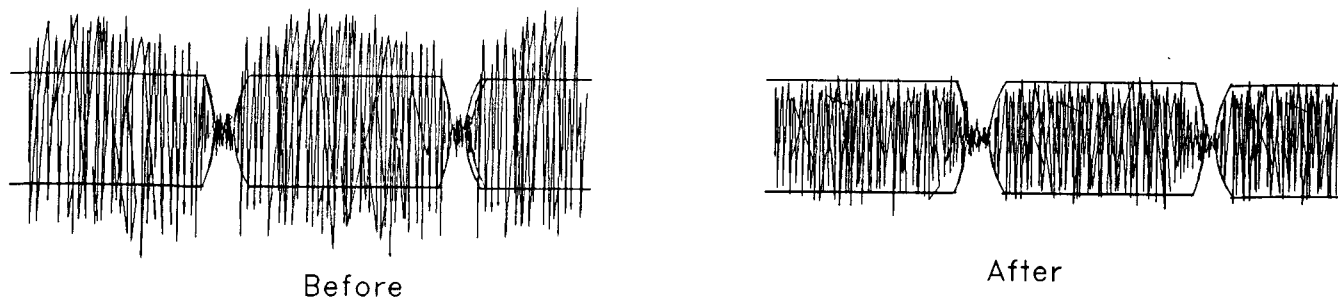


Fig. 1

4. PAL COLOUR MATRIX ADJUSTMENT

4.1 The using measurer

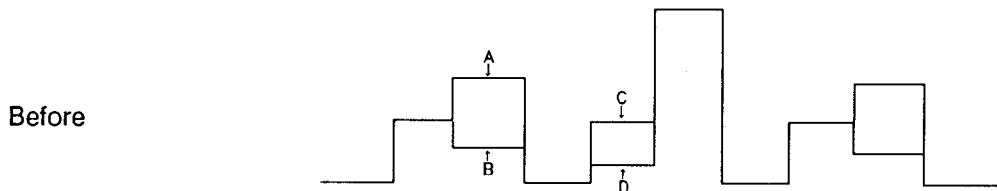
- 1) Oscilloscope (10:1 PROBE)

4.2 The adjustment preparation

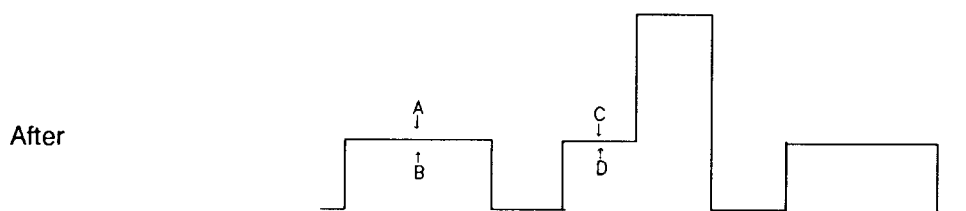
- 1) Pal colour demodulator pattern receiving
- 2) Connect the oscilloscope to pin 16 of PWB-Main Board IC501 (TDA3561A).
- 3) Set the Colour, Contrast Max, Bright to the proper brightness

4.3 The Adjustment

- 1) By turning Vr501, make A consistent with B.



- 2) Byturning t505, make C consistent with D.



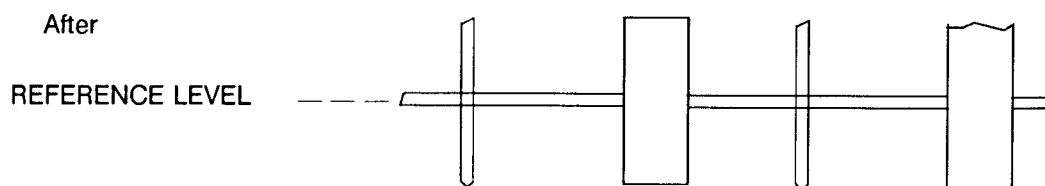
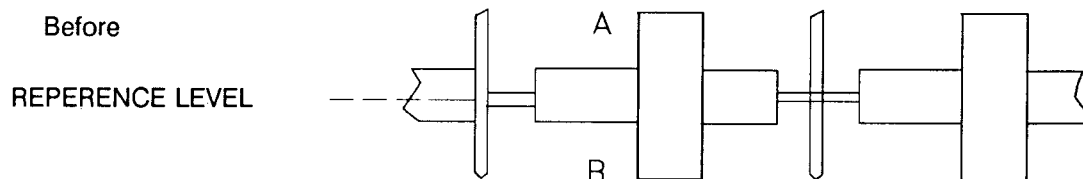
5. THE QUADRATURE REFERENCE (DR/DB)

5.1 The using measurer

- 1) Oscilloscope (10:1 PROBE)

5.2 The application preparation

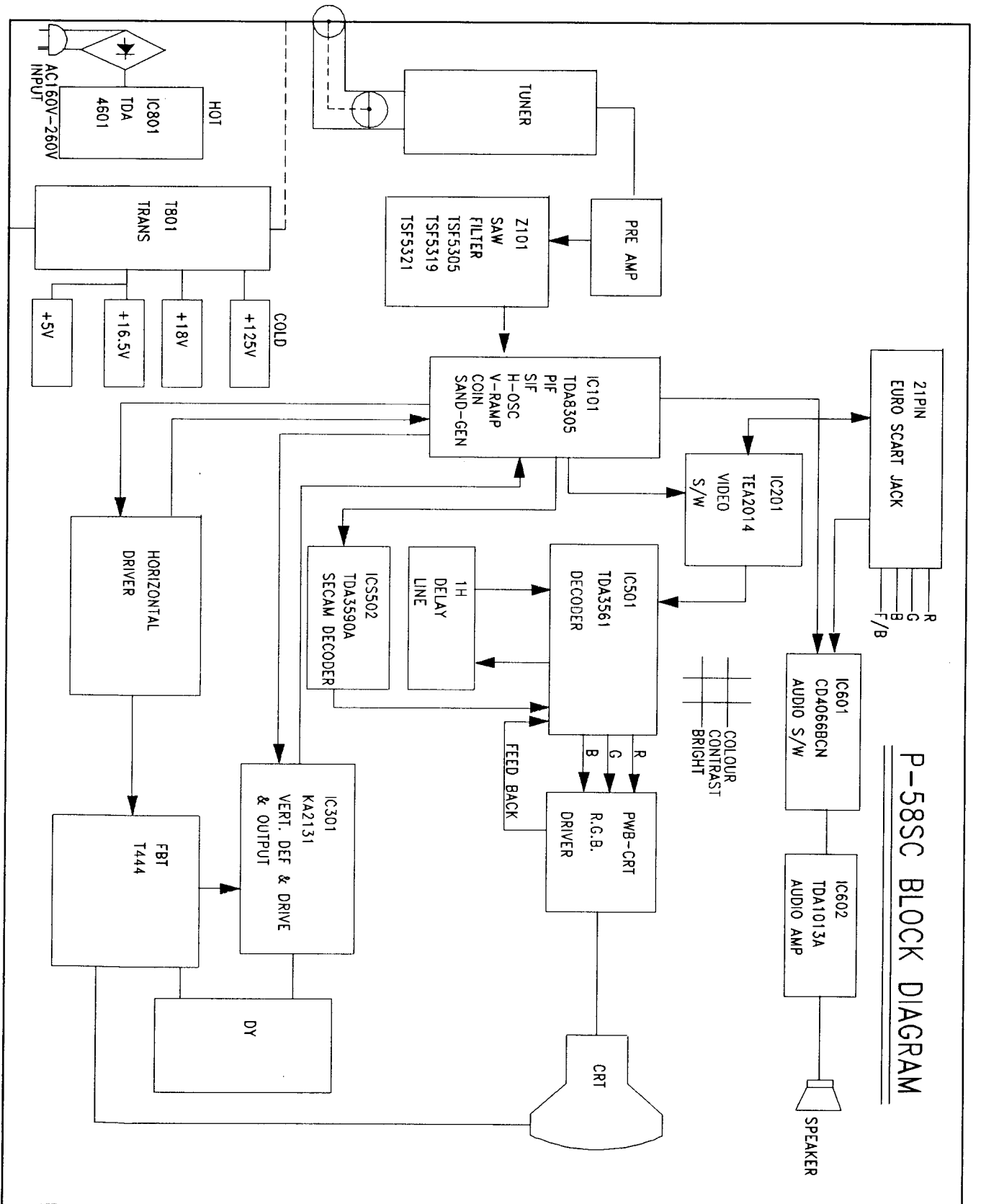
- 1) Secam Philips pattern receiving
- 2) Connect the oscilloscope probe to pin 14 of the PWB Main Board ICS502 (TDA3590A).
- 3) Set the Colour/Contrast Max, Bright to the proper brightness.
- 4) Set VR5S01 to the center.



5.3 The Adjustment

- 1) By adjusting TS02, make B-Y line consistent with REF LEVEL by adjusting.
- 2) Move the oscilloscope probe to pin 13 of IC502.
- 3) By adjusting VR502, make R-Y Line consistent with REF LEVEL by adjusting.

P-58SC BLOCK DIAGRAM

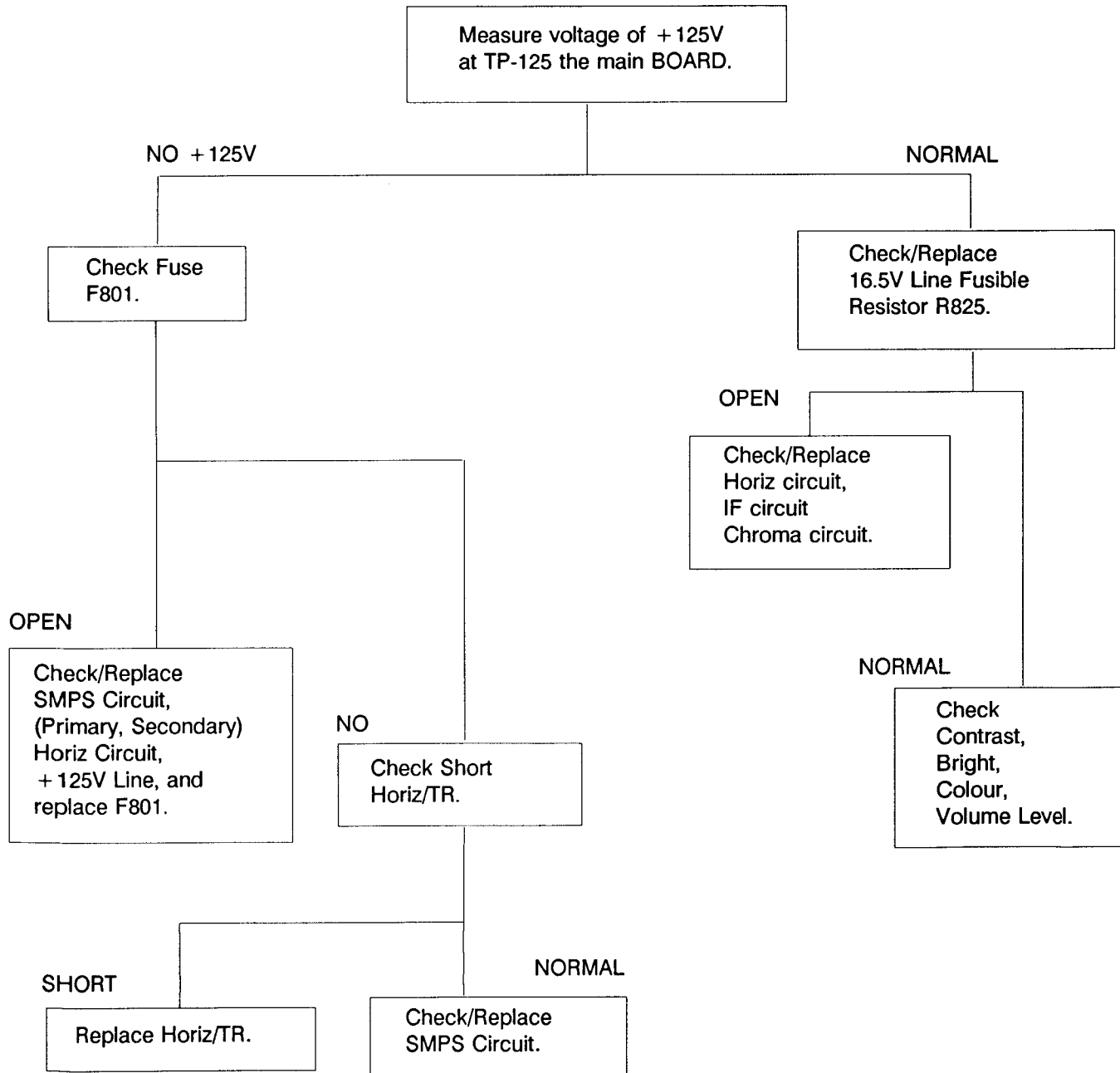


TROUBLE-SHOOTING CHARTS

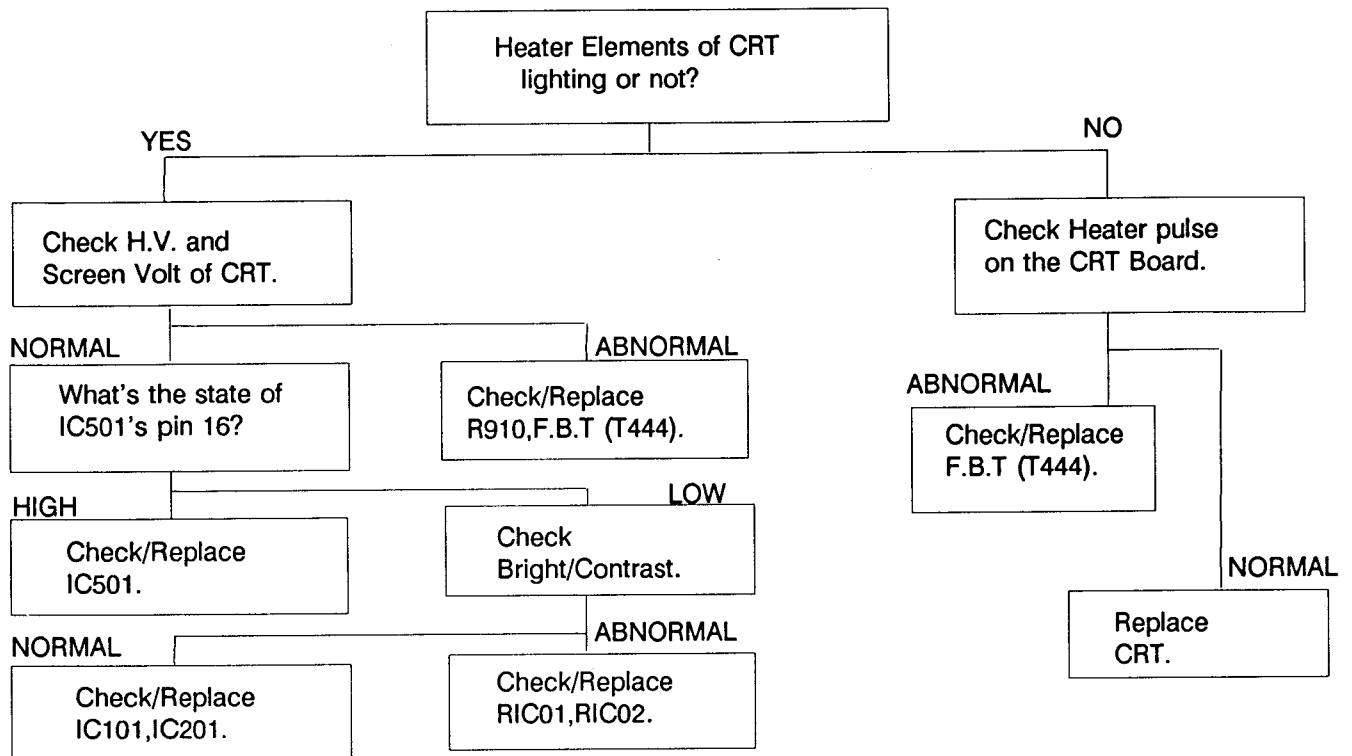
The following charts are devoted to the trouble-shooting which, if followed carefully, will assist you in tracking down a fault to the correct stage. In order to utilize the charts (fault trees), first establish the complains, i.e.-No Raster, No Sound.

Locate the chart applicable and then, progress through the various alternatives until a final block indicates the defective components or stages.

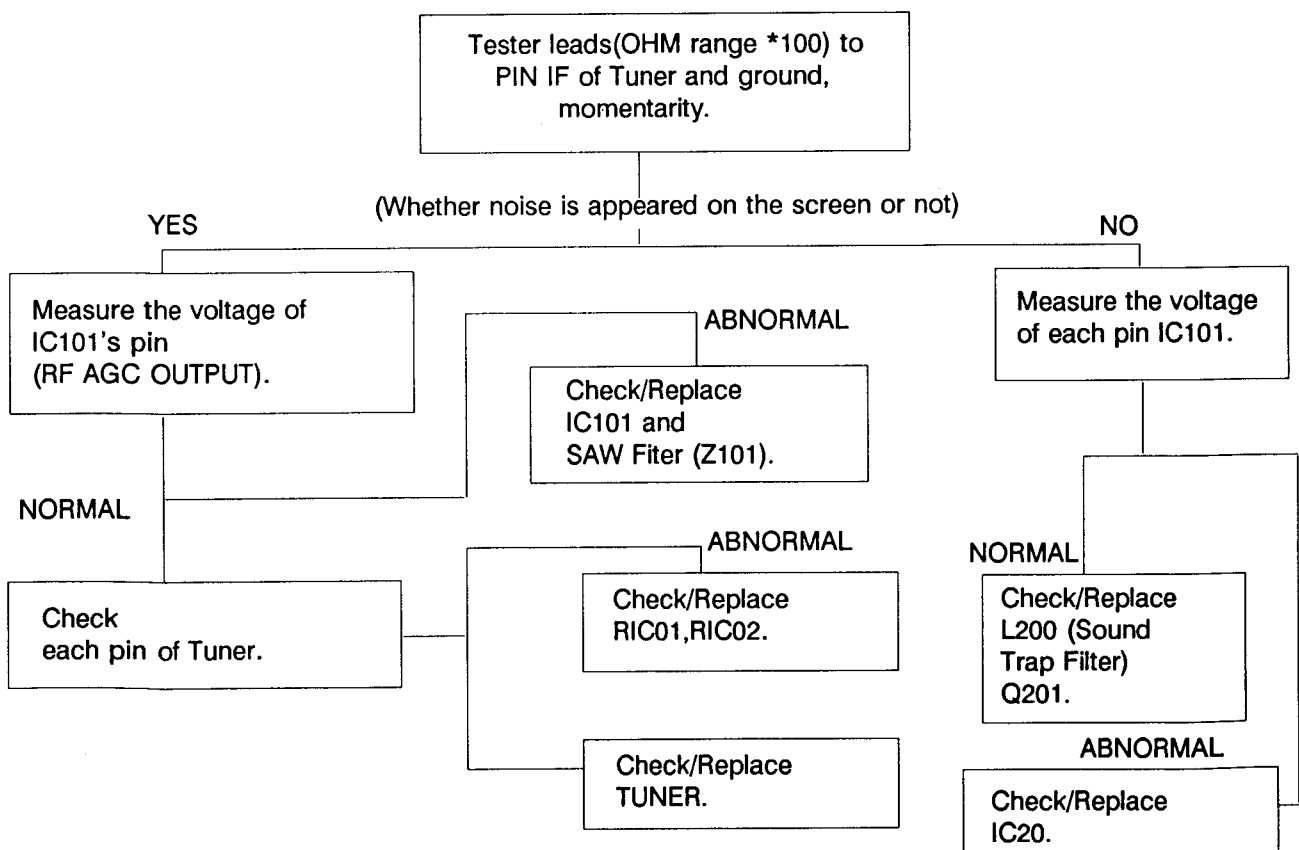
NO RASTER AND NO SOUND



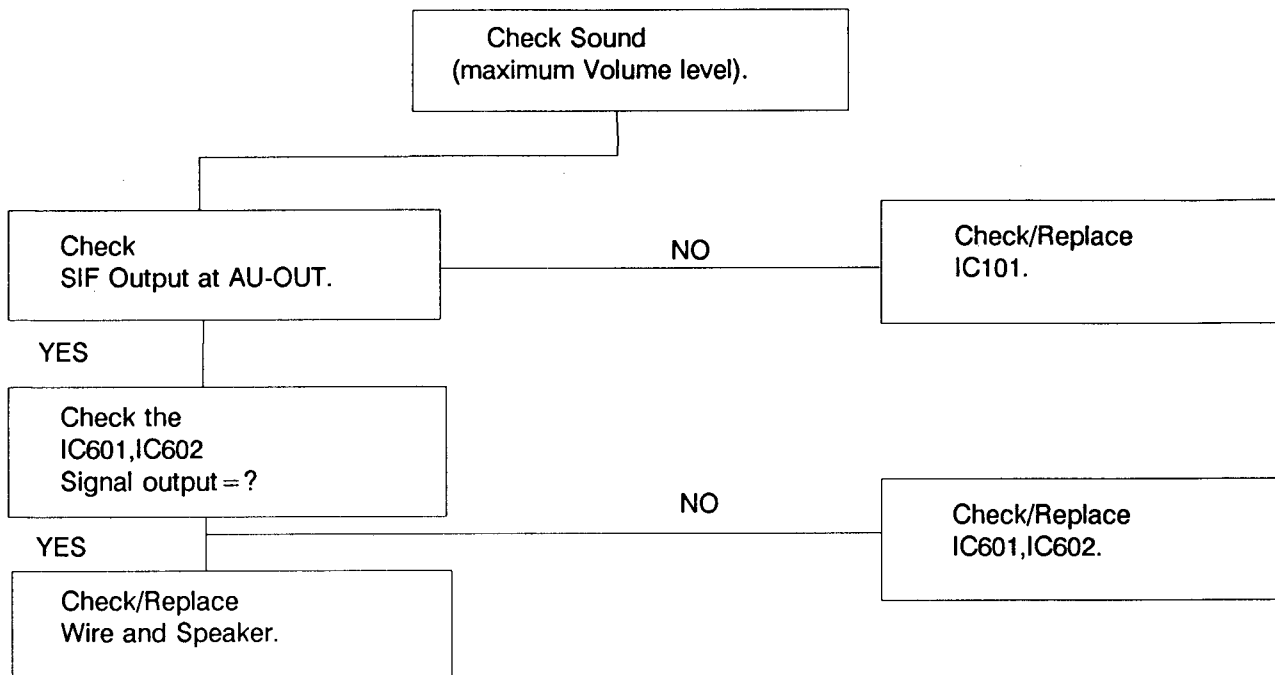
NO RASTER (SOUND OK)



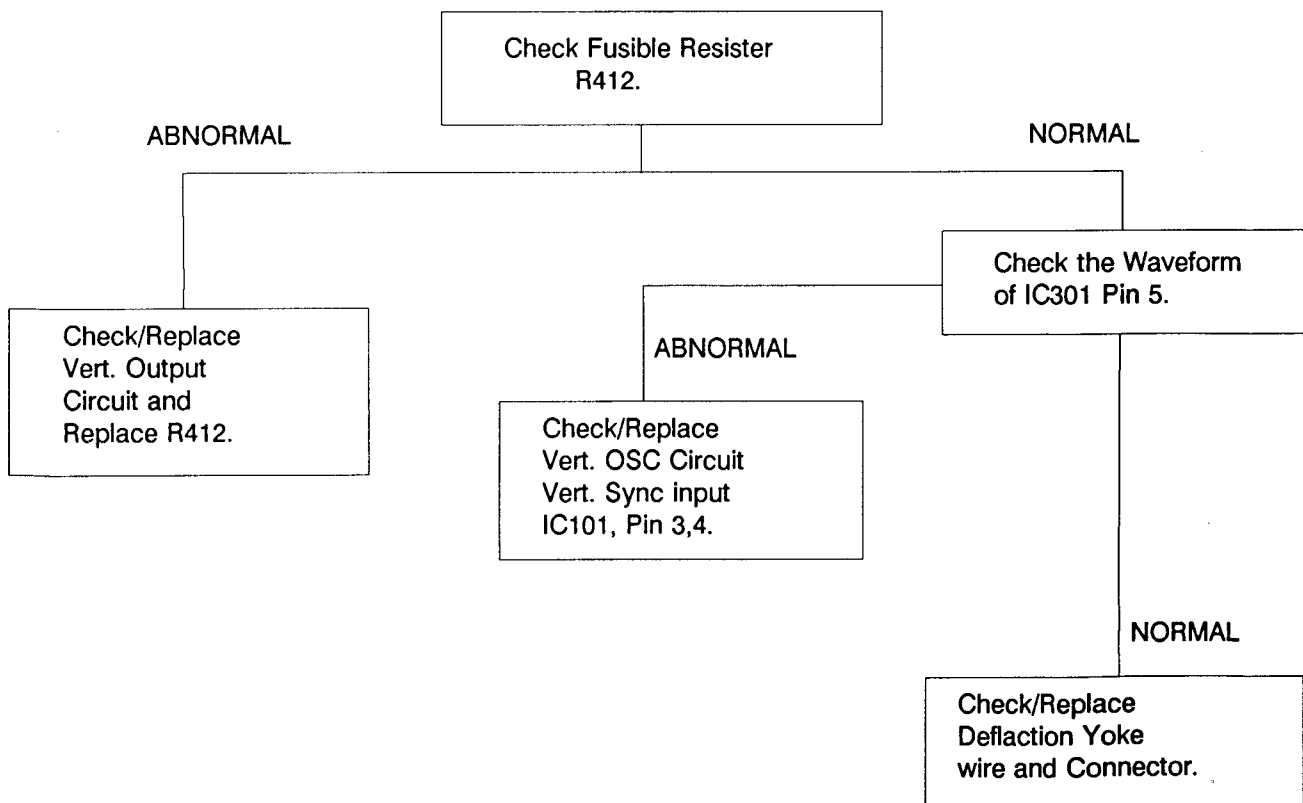
NO PICTURE (RASTER ON) AND NO SOUND



NO SOUND (PICTURE OK)



NO VERT.SCAN (ONE HORIZ.LINE RASTER)



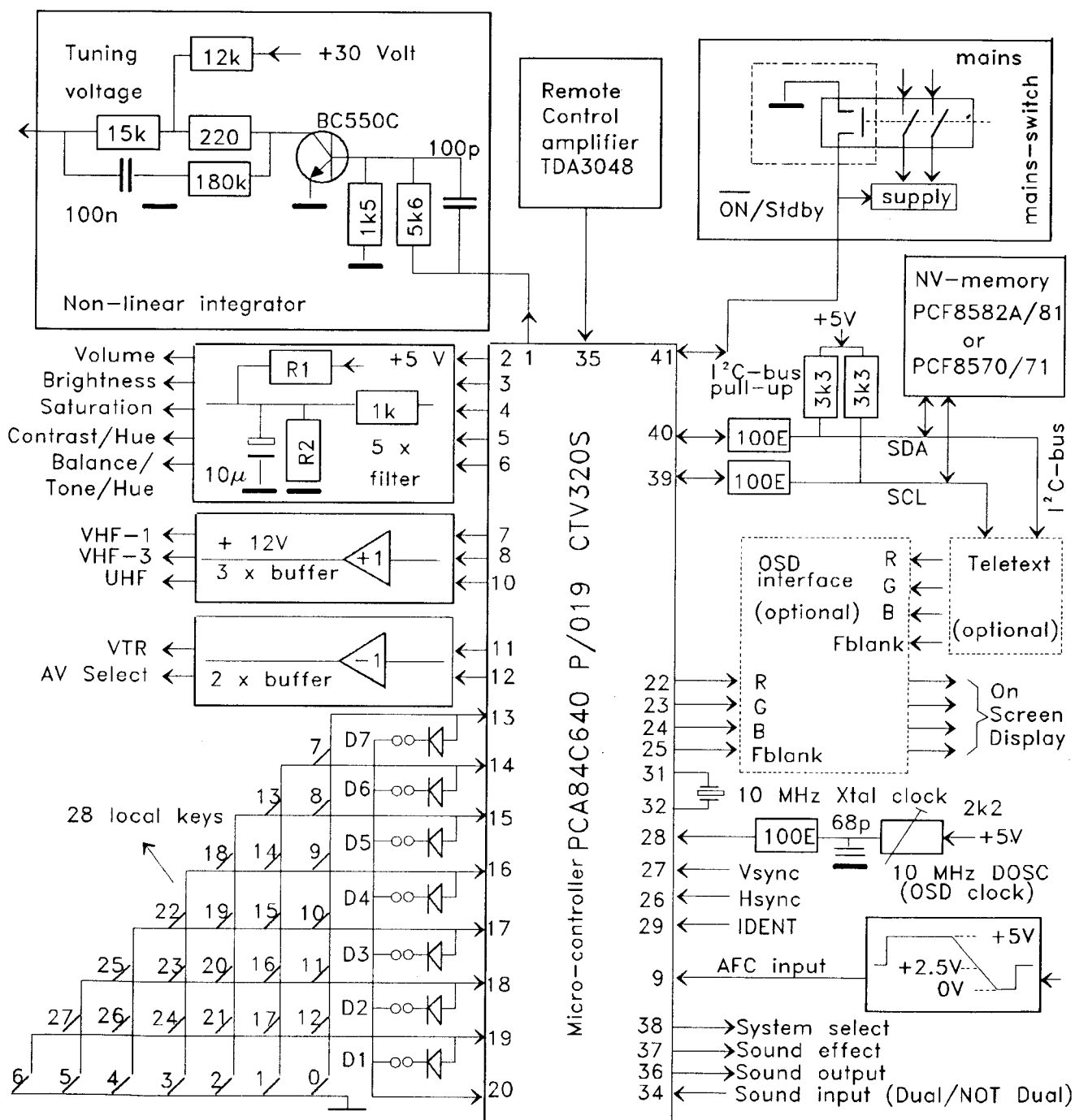


Diagram of PCA84C640 P/019 in CTV320S.

1	DP00/TDAC	VTUNN	tuning voltage control output
2	DP01/PWM1	VOL	volume control output
3	DP02/PWM2	BRI	brightness control output
4	DP03/PWM3	SAT	saturation control output
5	DP04/PWM4	CON/HUE	contrast or hue control output
6	DP05/PWM5	BAL/TON/HUE	balance, tone or hue control output
7	P10 1) 2)	VHF-L	band-switch VHF-low output
8	P11 1) 2)	VHF-H	band-switch VHF-high output
9	DP17/AFC	AFC	analogue AFC sense input
10	P12 1) 2)	UHF	band-switch UHF output
11	P13 1)	VTR	VTR time constant control output
12	P14 1)	AV	ext./int. /Audio/Video source control output
13	P00 1)	KEYB0	keyboard scan line input/output
14	P01 1)	KEYB1	keyboard scan line input/output
15	P02 1)	KEYB2	keyboard scan line input/output
16	P03 1)	KEYB3	keyboard scan line input/output
17	P04 1)	KEYB4	keyboard scan line input/output
18	P05 1)	KEYB5	keyboard scan line input/output
19	P06 1)	KEYB6	keyboard scan line input/output
20	P07	MDSTR	system mode strobe output
21	Vss		ground supply input
22	VOW1/DP16	RED	OSD red output
23	VOW2/DP15	GREEN	OSD green output
24	VOW3	BLUE	OSD blue output
25	VOB	FBL	OSD fast blanking output
26	HSYNCN	HSYNC	horizontal synchronization input
27	VSYN CN	VSYN C	vertical synchronization input
28	DOSC		RC oscillator input for OSD
29	T1	IDENT	horizontal coincidence input
30	TEST		test input; connected to ground
31	XTAL1		oscillator input; 10 MHz crystal
32	XTAL2		oscillator output
33	RESETN		power-on reset input/output
34	DP14	SNDI	dual/non dual language sound input
35	INTN/T0	RMOT	remote control input
36	DP13 1)	SNDO	sound mode select output
			Language 1/2 control output
			Stereo/mono control output
37	DP12 1)	EFFECT	Sound effect control output
38	DP11 1)	SYSTEM	PAL/SECAM system standard control output
			SECAM-L/L' depends on VHF-L output
			PAL/NTSC system standard control output
39	DP07/SCL	SCL	I ² C-bus clock signal input/output
40	DP06/SDA	SDA	I ² C-bus data signal input/output
41	DP10	STDBY	Standby/On control input/output
42	Vdd		+ 5V supply voltage input

Note:

- 1) These pins are read at "cold start", they define the configuration/options of the TV-system controlled by CTV320S.
- 2) These pins can command a solenoid to switch-off AC-mains supply.

TDA4601 (IC801)

The integrated circuit TDA4601 or-D is designed for regulating controlling and protecting the switching transistor installed in the flyback converter power supplies. It also protects the complete SMPS by preventing an increase in the secondary voltage in case of errors. In addition to their use with TV receivers and video recorders, these ICs can be applied in power supplies of Hi-Fi sets and active speakers due to their wide operational ranges and superior voltage stability during high load change.

1. Features

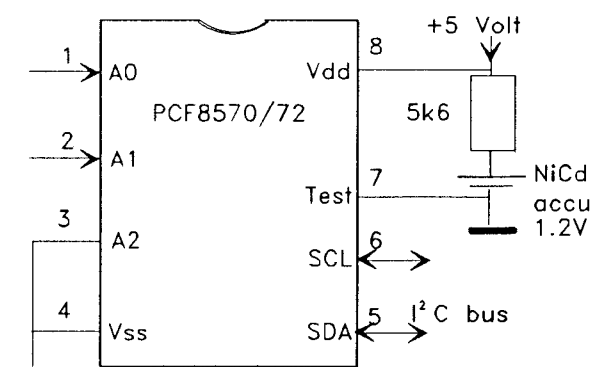
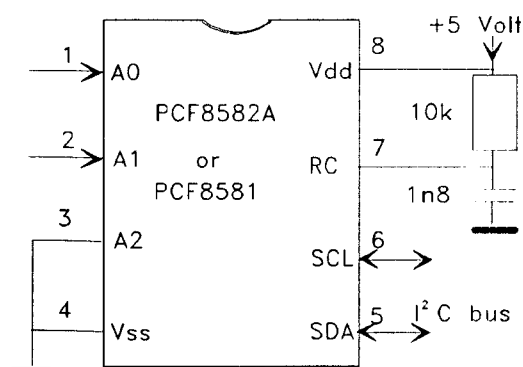
- Direct control of switching transistor
- Low start-up current
- Reversing linear overload characteristic
- Collector current proportional to base-current input
- Protective circuit in the event of errors.

2. Pin description

Pin No	Function
1	Vref output
2	Zero-passage identification
3	Input regulating amplifier, overload amplifier
4	Collector-current simulation
5	Possible connection for additional RLD0 protective circuit
6	Ground (rigidly connected to substrate RLD0 mounting plate)
7	DC voltage output for charging the RLD0 coupling capacitor
8	Pulse output, driving the switching RLD0 transistor
9	Power supply

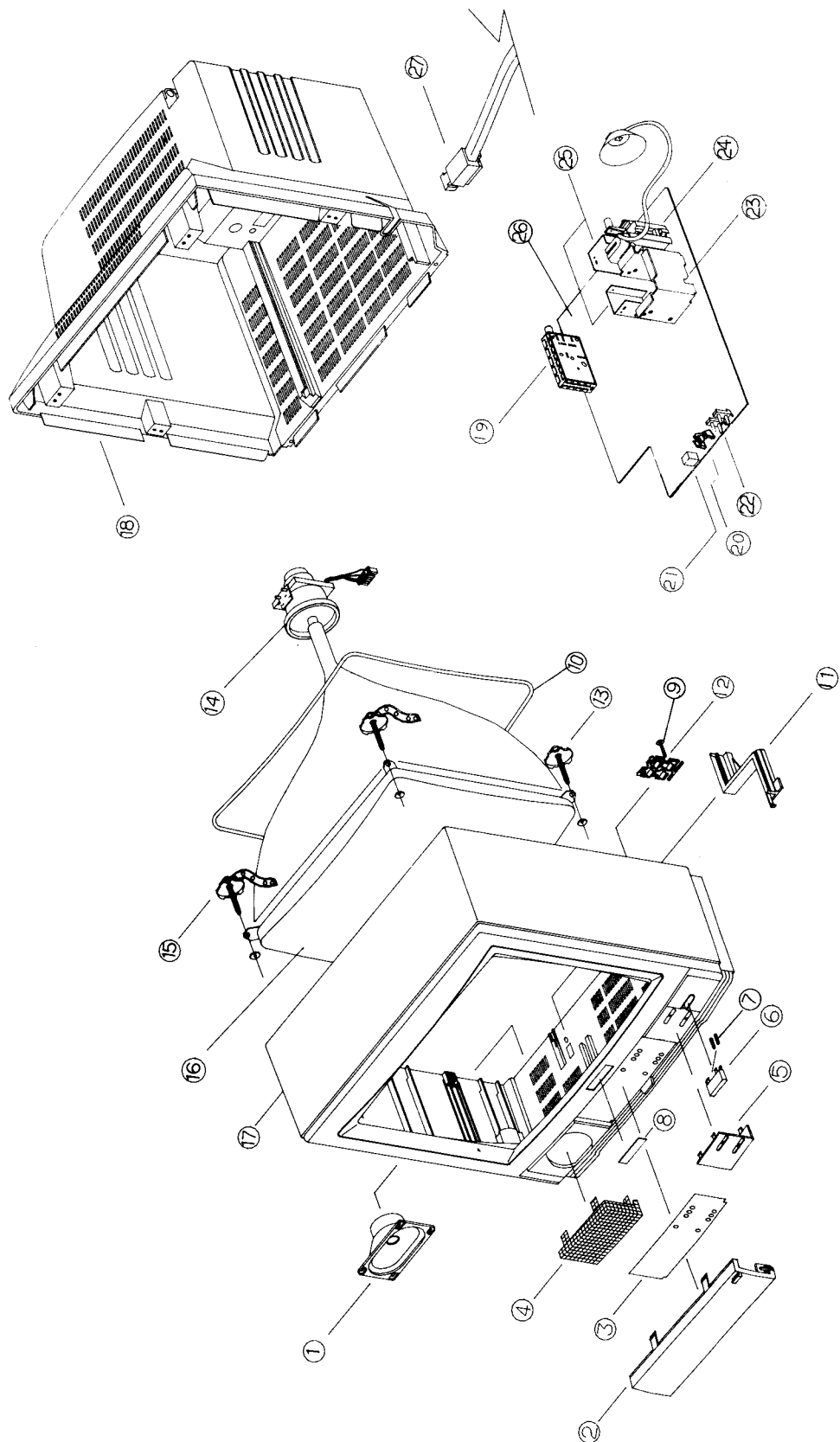
NON-VOLATILE MEMORY

The CTV320s tuning and sound system requires 128 bytes non-volatile memory (EEPROM PCF8581A or CMOS PCF2). With such a memory the system is able to store up 40 "pre-selected" programs, the video and sound control values (option 9a). The number of programs can be extended to 90 (option 9b) by using a 256 bytes memory (EEPROM PCF8582A or CMOS PCF8570).



Application of CMOS and EEPROM non-volatile memory in CTV320S.

EXPLODED VIEW



EXPLODED VIEW

N O	DESCRIPTION	CODE - NO	SPECIFICATION	Q'TY
1	SPEAKER-GENERAL	34209-169-140	5902BR 3W	1
2	DOOR-VR, BOX	37643-150-250	HIPS HB BLK 066 OSD	1
3	PVC-CONTROL	38093-104-210	PVC SHEET T0.3 CX5012Z PAL1	1
4	GRILLE-WOOFER	37713-221-510	SPC-1 T0.5 #066	1
5	WINDOW-F, S	38013-114-350	PC GZ 21051 GRY SILK PAL1	1
6	KNOB-POWER	37624-620-950	ABS HB BLK SACHUL	1
7	SPRING-LOCK	36674-134-310	STS T0.4	1
8	INLAY-BRAND	37714-313-410	A1050S-H18 T0.5 SAMSUNG	1
9	SCREW-WASHER, SPEC	37154-101-210	2S-3X10 FE FZY	1
10	COIL-DEGAUSSING	32479-029-180	28RT130L1280	1
11	RAIL-PCB	36022-108-210	ABS VO NTR	1
12	KNOB-CH, VOL	37623-140-510	ABS HB BLK	1
13				
14	DEFL-YOKE	32439-090-010	DIE-1992GL	1
15	SCREW-CRT, ASSY	37124-100-620	6X30 PH+W/S-CLAMP	4
16	CRT-COLOR	32019-400-015	51GGB91X	1
17	CABINET-FRONT	36000-139-540	HIPS HB BLK 677+066, PAL1 5012	1
18	CABINET-BACK	36000-140-520	HIPS VO BLK, A/V IN	1
19	TUNER	34519-970-010	ECC-2885CED(JACK)	1
20	MODULE-REMOCON	32199-411-001	GPIU721Q	1
21	GUIDE-LED	36043-104-610	ABS VO BLK	1
22	SWITCH-TACT	33609 101-010	KPT 2105	3
23	HEAT-SINK, PI(BU508)	35684-118-910	A1050S-H14 T2.0 #C MDL	1
24	TRANS-FLYBACK	32859-136-010	FCM 2015AL(M)	1
25	HEAT-SINK, HORI	35684-118-110	SPC-1 T1.0 FT2	2
26	PWB-MAIN <S.N.A>	33004-144-341	330X245X1.6T P58SC1	1
27	POWER-CORD, AC	33053-816-580	KP-419J/LTCE-2F/8PT	1

CHASSIS REPLACEMENT PARTS LIST

ABBREVIATIONS: CC C-CERAMIC
 CE C-ELECTROLYTIC
 CFS C-M, POLYESTER
 CK C-CERAMIC, HK
 CQ C-POLYPROPYLENE, POLYESTER
 CS C-TANTALIUM, SOLID

RC R-COMPOSITION
 RD R-CARBON
 RF R-FUSIBLE
 RM R-METAL, FILM
 RP R-CEMENT WIRE
 RS R-METAL, OXIDE

NOTE: The items with "*" are usually out of stock since they are seldom required for the routine service. There may be some anticipated delay when you order these items.

*** S.N.A.=Service Not Available.***

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
1 . PWB - MAIN			R303	31018-177-332	RD 1/8T 3.3K-J
			R304	31018-377-681	RD 1/2T 680-J
PCB 33004-144-341 330X245X1.6T <S.N.A>			R305	31018-177-203	RD 1/8T 20K-J
RESISTORS			R306	31018-377-159	RP 1/2T 1.5R-J
NR001	31046-467-391	RS 1T 390-J (AUTO)	R307	31018-177-333	RD 1/8T 33K-J
R101	31018-177-120	RD 1/8T 12-J	R308	31018-177-183	RD 1/8T 18K-J
R102	31018-177-470	RD 1/8T 47-J	R309	31018-377-271	RD 1/2T 270-J
R103	31018-177-122	RD 1/8T 1.2K-J	R310	31018-177-153	RD 1/8T 15K-J
R104	31018-177-472	RD 1/8T 4.7K-J	R311	31018-177-224	RD 1/8T 220K-J
R105	31018-177-101	RD 1/8T 100-J	R312	31018-177-222	RD 1/8T 2.2K-J
R107	31018-177-100	RD 1/8T 10-J	R401	31018-177-154	RD 1/8T 150K-J
R108	31018-177-122	RD 1/8T 1.2K-J	R402	31048-176-303	RM 1/8T 30K-G
R110	31018-177-472	RD 1/8T 4.7K-J	R403	31018-177-182	RD 1/8T 1.8K-J
R111	31018-177-223	RD 1/8T 22K-J	R404	31018-177-824	RD 1/8T 820K-J
R112	31018-177-182	RD 1/8T 1.8K-J	R405	31018-177-272	RD 1/8T 2.7K-J
R113	31018-177-332	RD 1/8T 3.3K-J	R406	31018-177-220	RD 1/8T 22-J
R114	31018-177-224	RD 1/8T 220K-J	R407	31018-177-224	RD 1/8T 220K-J
R115	31018-177-224	RD 1/8T 220K-J	R408	31018-177-333	RD 1/8T 33K-J
R116	31018-177-134	RD 1/8T 130K-J	R409	31018-177-753	RD 1/8T 75K-J
R118	31018-177-101	RD 1/8T 100-J	R410	31018-177-271	RD 1/8T 270-J
R121	31018-177-159	RD 1/8T 1.5-J	R411	31018-377-680	RD 1/2T 68-J
R122	31018-177-472	RD 1/8T 4.7K-J	R412	31059-002-010	RF 1/2P 1-J
R123	31018-177-472	RD 1/8T 4.7K-J	R414	31046-467-151	RS 1T 150-J (AUTO)
R124	31018-177-333	RD 1/8T 33K-J	R415	31046-467-102	RS 1T 1K-J (AUTO)
R202	31018-177-221	RD 1/8T 220-J	R416	31018-177-683	RD 1/8T 68K-J
R204	31018-177-202	RD 1/8T 2K-J	R417	31018-177-563	RD 1/8T 56K-J
R205	31018-177-102	RD 1/8T 1K-J	R501	31018-177-512	RD 1/8T 5.1K-J
R206	31018-177-750	RD 1/8T 75-J	R502	31018-177-152	RD 1/8T 1.5K-J
R207	31018-177-750	RD 1/8T 75-J	R503	31018-177-102	RD 1/8T 1K-J
R208	31018-177-222	RD 1/8T 2.2K-J	R504	31018-177-561	RD 1/8T 560-J
R209	31048-175-102	RM 1/8T 1K-P	R505	31018-177-471	RD 1/8T 470-J
R210	31018-376-124	RD 1/2T 120K-G	R506	31018-177-123	RD 1/8T 12K-J
R302	31048-175-474	RM 1/8T 470K-P	R507	31018-177-102	RD 1/8T 1K-J
			R508	31018-177-561	RD 1/8T 560-J
			R509	31018-177-112	RD 1/8T 1.1K-J

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
R510	31018-177-750	RD 1/8T 75-J	R802	31049-317-104	RS 3P 2.7K-J
R511	31018-177-750	RD 1/8T 75-J	R803	31046-567-154	RS 2T 150K-J(AUTO)
R512	31018-177-750	RD 1/8T 75-J	R804	31018-177-221	RD 1/8T 220-J
R513	31018-177-750	RD 1/8T 75-J	R805	31018-177-122	RD 1/8T 1.2K-J
R514	31018-177-750	RD 1/8T 75-J	R806	31018-177-103	RD 1/8T 10K-J
R515	31018-177-750	RD 1/8T 75-J	R807	31018-177-113	RD 1/8T 11K-J
R517	31018-177-111	RD 1/8T 110-J	R808	31046-567-101	RS 2T 100-J(AUTO)
R518	31018-177-821	RD 1/8T 820-J	R809	31046-467-274	RS 1T 270K-J (AUTO)
R519	31018-177-750	RD 1/8T 75-J	R811	31018-177-104	RD 1/8T 100K-J
R520	31018-177-124	RD 1/8T 120K-J	R812	31018-377-688	RD 1/2T 0.68-J
R521	31018-177-561	RD 1/8T 560-J	R813	31018-177-101	RD 1/8T 100-J
R522	31018-177-242	RD 1/8T 2.4K-J	R814	31039-586-390	RW 5J 39-J
R523	31018-177-911	RD 1/8T 910-J	R815	31028-328-475	RC 1/2P 4.7M-K
R524	31018-177-511	RD 1/8T 510-J	R821	31046-567-333	RS 2T 33K-J(AUTO)
R601	31018-177-221	RD 1/8T 220-J	R822	31046-567-103	RS 2T 10K-J(AUTO)
R602	31018-177-681	RD 1/8T 680-J	R823	31046-567-220	RS 2T 22-J(AUTO)
R603	31018-177-472	RD 1/8T 4.7K-J	R824	31018-377-680	RD 1/2T 68-J
R604	31018-177-132	RD 1/8T 1.3K-J	R825	31059-002-130	RF 1/2P 0.47-K
R605	31018-177-182	RD 1/8T 1.8K-J	R829	31059-002-130	RF 1/2P 0.47-K
R606	31018-177-121	RD 1/8T 120-J	R901	31018-177-101	RD 1/8T 100-J
R607	31018-177-102	RD 1/8T 1K-J	R902	31018-177-101	RD 1/8T 100-J
R608	31018-177-202	RD 1/8T 2K-J	R903	31018-177-101	RD 1/8T 100-J
R609	31018-177-103	RD 1/8T 10K-J	R904	31046-467-153	RS 1T 15K-J (AUTO)
R610	31018-177-750	RD 1/8T 75-J	R905	31046-467-153	RS 1T 15K-J (AUTO)
R611	31018-177-750	RD 1/8T 75-J	R906	31046-467-153	RS 1T 15K-J (AUTO)
R612	31018-177-103	RD 1/8T 10K-J	R907	31028-328-472	RC 1/2T 4.7K-K
R613	31018-177-103	RD 1/8T 10K-J	R908	31028-328-472	RC 1/2T 4.7K-K
R614	31018-177-432	RD 1/8T 4.3K-J	R909	31028-328-472	RC 1/2T 4.7K-K
R615	31018-177-822	RD 1/8T 8.2K-J	R910	31059-003-100	RF 1P 1-K
R616	31018-177-104	RD 1/8T 100K-J	R913	31018-177-431	RD 1/8T 430-J
R617	31018-177-224	RD 1/8T 220K-J	R914	31018-177-431	RD 1/8T 430-J
R618	31018-177-562	RD 1/8T 5.6K-J	R915	31018-177-431	RD 1/8T 430-J
R619	31018-177-203	RD 1/8T 20K-J	R916	31018-177-151	RD 1/8T 150-J
R620	31018-377-159	RP 1/2T 1.5R-J	RR01	31018-177-332	RD 1/8T 3.3K-J
R621	31018-377-479	RD 1/2T 4.7-J	RR03	31018-177-683	RD 1/8T 68K-J
R622	31018-177-202	RD 1/8T 2K-J	RR04	31018-177-153	RD 1/8T 15K-J
R623	31018-177-103	RD 1/8T 10K-J	RR05	31018-177-103	RD 1/8T 10K-J
R625	31018-177-103	RD 1/8T 10K-J	RR06	31018-177-103	RD 1/8T 10K-J
R626	31018-177-103	RD 1/8T 10K-J	RR07	31018-177-472	RD 1/8T 4.7K-J
R627	31018-177-222	RD 1/8T 2.2K-J	RR08	31018-177-681	RD 1/8T 680-J
R701	31018-177-333	RD 1/8T 33K-J	RR11	31018-177-202	RD 1/8T 2K-J
R702	31018-177-333	RD 1/8T 33K-J	RR12	31018-177-512	RD 1/8T 5.1K-J
R704	31018-177-104	RD 1/8T 100K-J	RR14	31018-177-511	RD 1/8T 510-J
R705	31018-177-124	RD 1/8T 120K-J	RR15	31018-177-132	RD 1/8T 1.3K-J
R705	31018-177-753	RD 1/8T 75K-J	RR16	31018-177-471	RD 1/8T 470-J
R708	31018-177-203	RD 1/8T 20K-J	RR17	31018-177-102	RD 1/8T 1K-J
R709	31018-177-273	RD 1/8T 27K-J	RR18	31018-177-202	RD 1/8T 2K-J
R720	31018-177-104	RD 1/8T 100K-J	RR19	31018-177-302	RD 1/8T 3K-J
R801	31039-687-569	RW 7H 5.6-J	RR19	31018-177-392	RD 1/8T 3.9K-J

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
RR20	31018-177-333	RD 1/8T 33K-J	RS11	31018-177-112	RD 1/8T 1.1K-J
RR21	31018-177-562	RD 1/8T 5.6K-J	RS12	31018-177-391	RD 1/8T 390-J
RR22	31018-177-562	RD 1/8T 5.6K-J	RS13	31018-177-911	RD 1/8T 910-J
RR23	31018-177-333	RD 1/8T 33K-J	RS14	31018-177-159	RD 1/8T 1.5-J
RR24	31018-177-562	RD 1/8T 5.6K-J	RS15	31018-177-202	RD 1/8T 2K-J
RR25	31018-177-562	RD 1/8T 5.6K-J	RS16	31018-177-122	RD 1/8T 1.2K-J
RR26	31018-177-134	RD 1/8T 130K-J	RS17	31018-177-202	RD 1/8T 2K-J
RR28	31018-177-333	RD 1/8T 33K-J			
RR29	31018-177-562	RD 1/8T 5.6K-J		VARIABLE RESISTORS	
RR30	31018-177-562	RD 1/8T 5.6K-J	VR101	31249-128-002	EVN-DJA A03 B20K
RR31	31018-177-333	RD 1/8T 33K-J	VR201	31249-128-011	EVN-DJA A03 B500
RR32	31018-377-102	RD 1/2T 1K-J	VR301	31249-128-004	EVN-DJA A03 B1K
RR33	31018-177-471	RD 1/8T 470-J	VR303	31249-128-005	EVN-DJA A03 B5K
RR34	31018-177-471	RD 1/8T 470-J	VR401	31249-128-001	EVN-DJA A03 B10K
RR35	31018-177-471	RD 1/8T 470-J	VR402	31249-128-008	EVN-DJA A03 B50K
RR36	31018-177-471	RD 1/8T 470-J	VR501	31249-128-003	EVN-DJA A03 B2K
RR37	31018-177-181	RD 1/8T 180-J	VR801	31249-128-005	EVN-DJA A03 B5K
RR38	31018-177-222	RD 1/8T 2.2K-J	VR901	31249-128-005	EVN-DJA A03 B5K
RR39	31018-177-223	RD 1/8T 22K-J	VR902	31249-128-005	EVN-DJA A03 B5K
RR40	31018-177-181	RD 1/8T 180-J	VR903	31249-128-005	EVN-DJA A03 B5K
RR41	31048-175-102	RM 1/8T 1K-P	VR904	31249-128-006	EVN-DJA A03 B200
RR42	31018-177-181	RD 1/8T 180-J	VR905	31249-128-006	EVN-DJA A03 B200
RR43	31018-177-102	RD 1/8T 1K-J	VRS01	31249-128-004	EVN-DJA A03 B1K
RR44	31018-177-102	RD 1/8T 1K-J			
RR45	31018-177-101	RD 1/8T 100-J		CAPACITORS	
RR46	31018-177-101	RD 1/8T 100-J	C101	31407-047-220	CC45 TAPG RH 50V 220-J
RR47	31018-177-101	RD 1/8T 100-J	C103	31417-318-103	CK45 TAPG B 50V 103-K
RR48	31018-177-101	RD 1/8T 100-J	C104	31407-105-280	CC45 TAPG CH 50V 560-J
RR49	31018-177-103	RD 1/8T 10K-J	C105	31417-318-103	CK45 TAPG B 50V 103-K
RR50	31018-177-202	RD 1/8T 2K-J	C106	31417-318-103	CK45 TAPG B 50V 103-K
RR51	31046-567-271	RS 2T 270-J(AUTO)	C107	31607-401-500	CE04W TAPG 16V 470M-M(SG)
RR52	31018-177-101	RD 1/8T 100-J	C108	31417-318-103	CK45 TAPG B 50V 103-K
RR53	31018-177-332	RD 1/8T 3.3K-J	C111	31607-402-230	CE04W TAPG 50V 3.3M
RR54	31018-177-332	RD 1/8T 3.3K-J	C112	31507-127-012	ECQB1H104J-F3
RR55	31018-177-222	RD 1/8T 2.2K-J	C113	31607-401-470	CE04W TAPG 16V 100M VENT
RR56	31018-177-223	RD 1/8T 22K-J	C116	31507-127-025	ECQ-VIH334J-F3
RR57	31018-177-221	RD 1/8T 220-J	C117	31507-127-008	ECQB1H223J-F3
RR58	31018-177-470	RD 1/8T 47-J	C118	31507-127-011	ECQB1H683J-F3
RR59	31018-177-223	RD 1/8T 22K-J	C119	31607-401-500	CE04W TAPG 16V 470M-M(SG)
RS01	31018-177-473	RD 1/8T 47K-J	C120	31607-902-250	CE04W TAPG 50V 0.22M
RS02	31018-177-622	RD 1/8T 6.2K-J	C121	31607-402-210	CE04W TAPG 50V 1M
RS03	31018-177-132	RD 1/8T 1.3K-J	C122	31607-402-070	CE04W TAPG 35V 22M
RS04	31018-177-102	RD 1/8T 1K-J	C123	31607-402-250	CE04W TAPG 50V 10M
RS05	31018-177-331	RD 1/8T 330-J	C124	31607-401-470	CE04W TAPG 16V 100M VENT
RS06	31018-177-221	RD 1/8T 220-J	C125	31507-127-024	ECQ-VIH 224J-F3
RS07	31018-177-162	RD 1/8T 1.6K-J	C202	31417-318-103	CK45 TAPG B 50V 103-K
RS08	31018-177-221	RD 1/8T 220-J	C203	31607-402-530	CE04W TAPG 50V 0.47u-NP
RS08	31018-177-563	RD 1/8T 56K-J	C204	31607-401-470	CE04W TAPG 16V 100M VENT
RS09	31018-177-124	RD 1/8T 120K-J	C205	31607-402-530	CE04W TAPG 50V 0.47u-NP

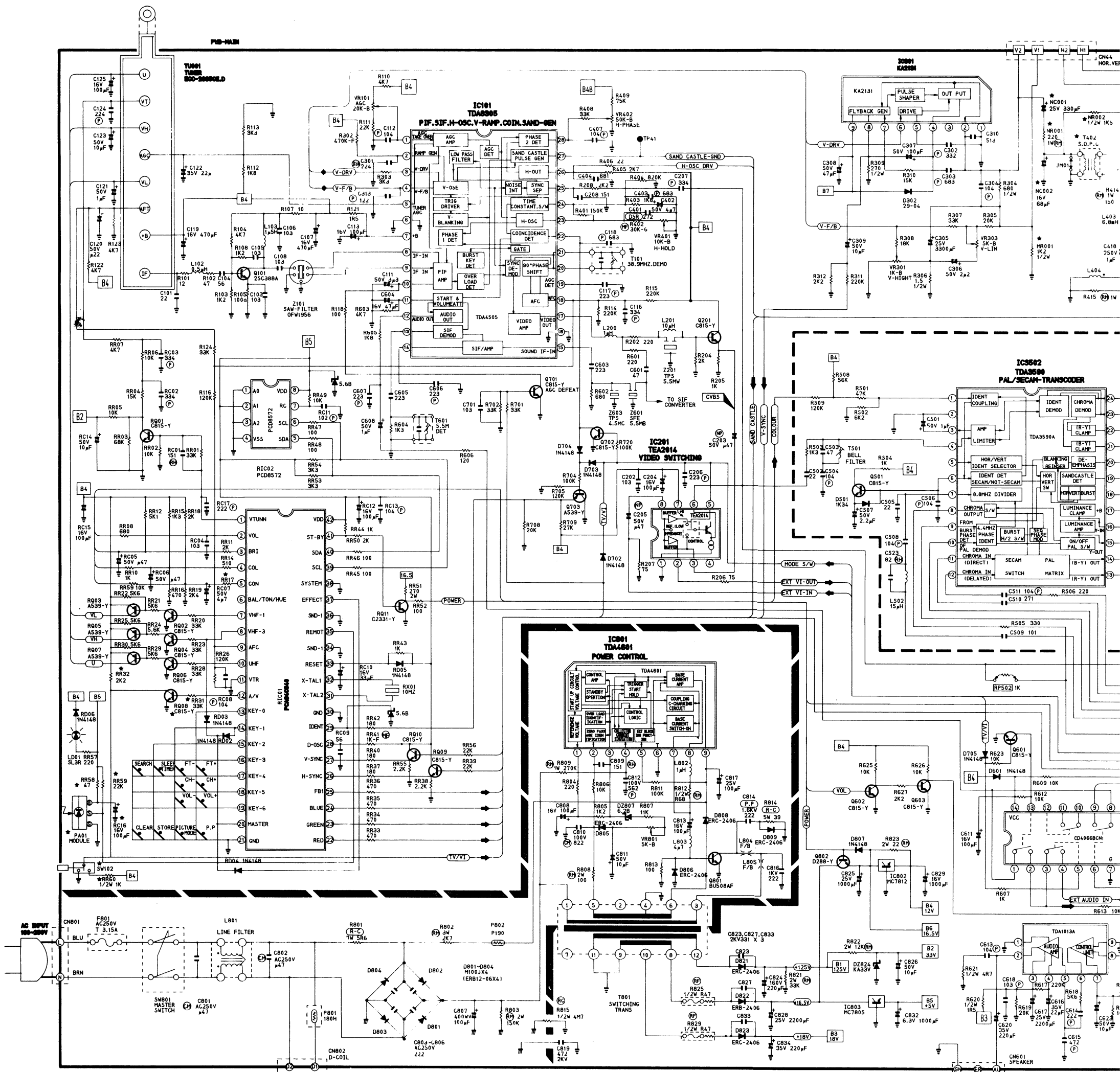
Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
C206	31507-127-008	BCQB1H223J-F3	C522	31507-127-012	BCQB1H104J-F3
C207	31507-127-025	ECQ-VIH334J-F3	C523	31607-402-210	CE04W TAPG 50V 1M
C208	31407-105-700	CC45 TAPG CH 50V 151-J	C524	31607-402-210	CE04W TAPG 50V 1M
C209	31507-127-025	ECQ-VIH334J-F3	C525	31607-402-550	CE04W 50V 6.8U-M
C301	31519-101-110	DSR 50V 0.22U-J	C526	31407-047-221	CC45 TAPG RH 50V 221-J
C302	31507-127-004	ECQB1H562J-F3	C601	31407-105-260	CC45 TAPG CH 50V 470-J
C303	31507-127-011	ECQB1H683J-F3	C603	31417-109-220	CK45 TAPG F 50V 223-Z
C304	31507-127-012	ECQB1H104J-F3	C604	31607-401-460	CE04W TAPG 16V 47M
C305	31609-904-332	CE04W 25V 3300u	C605	31417-109-220	CK45 TAPG F 50V 223-Z
C306	31607-402-220	CE04W TAPG 50V 2.2M	C606	31507-127-008	BCQB1H223J-F3
C307	31609-402-290	CE04W 50V 100M-VENT	C607	31507-127-008	BCQB1H223J-F3
C308	31607-402-280	CE04W TAPG 50V 47u	C608	31607-402-210	CE04W TAPG 50V 1M
C309	31607-402-250	CE04W TAPG 50V 10M	C609	31607-402-530	CE04W TAPG 50V 0.47u-NP
C310	31507-127-022	ECQB1H 513J-F3	C610	31607-402-530	CE04W TAPG 50V 0.47u-NP
C313	31507-127-023	ECQ-B1H 122J-F3	C611	31607-401-470	CE04W TAPG 16V 100M VENT
C401	31519-101-100	DSR 50V 0.0027 U-J	C612	31607-402-210	CE04W TAPG 50V 1M
C402	31607-402-240	CE04W TAPG 50V 4.7M	C613	31507-127-012	BCQB1H104J-F3
C403	31507-127-011	ECQB1H683J-F3	C614	31507-127-002	BCQB1H222J-F3
C404	31417-104-270	CK45 TAPG B 50V 681-K	C615	31507-127-016	BCQB1H 472-J F3
C405	31507-127-000	ECQB1H102J-F3	C616	31607-402-210	CE04W TAPG 50V 1M
C407	31507-127-024	ECQ-VIH 224J-F3	C617	31609-402-710	CE04W 35V 1000M
C408	31507-127-001	ECQB1H152J-F3	C618	31507-127-006	BCQB1H103J-F3
C409	31507-127-006	ECQB1H103J-F3	C620	31609-402-110	CE04W 35V 220M-VENT
C410	31417-344-222	CK45 TAPG F 50V 222-Z	C621	31507-127-002	BCQB1H222J-F3
C411	31519-400-003	CQ922M 1600V 0.0077-J	C623	31607-402-250	CE04W TAPG 50V 10M
C414	31609-402-710	CE04W 35V 1000M	C701	31417-318-103	CK45 TAPG B 50V 103-K
C416	31609-403-070	CE04W 100V 68U	C801	31569-903-120	CFS 922M AC250V 0.47M-M
C418	31607-403-450	CE04W TAPG 250V 1M	C802	31569-903-120	CFS 922M AC250V 0.47M-M
C419	31509-335-190	CQ922M 200V 0.43M-J	C803	31469-502-220	AC 250V 0.0022M-Z
C501	31507-127-012	BCQB1H104J-F3	C804	31469-502-220	AC 250V 0.0022M-Z
C502	31609-401-510	CE04W 16V 1000M VENT SNA	C805	31469-502-220	AC 250V 0.0022M-Z
C503	31417-104-400	CK45 TAPG B 50V 102-K	C806	31469-502-220	AC 250V 0.0022M-Z
C504	31507-127-024	ECQ-VIH 224J-F3	C807	31609-403-780	CE04W 400V 100M-M(LIG)
CS504	31507-127-012	BCQB1H104J-F3	C808	31607-401-470	CE04W TAPG 16V 100M VENT
C505	31507-127-008	BCQB1H223J-F3	C809	31407-105-700	CC45 TAPG CH 50V 151-J
C506	31407-106-260	CC45 TAPG RH 50V 101-J	C810	31509-332-000	CQ922M 100V 0.0082-J
C507	31407-106-260	CC45 TAPG RH 50V 101-J	C811	31607-402-250	CE04W TAPG 50V 10M
C510	31607-402-220	CE04W TAPG 50V 2.2M	C812	31507-127-004	ECQB1H562J-F3
C511	31507-127-024	ECQ-VIH 224J-F3	C813	31607-401-470	CE04W TAPG 16V 100M VENT
C512	31607-402-240	CE04W TAPG 50V 4.7M	C814	31509-391-090	CQ922M 1600V 0.0022-J
C513	31607-402-240	CE04W TAPG 50V 4.7M	C816	31419-901-660	CK45 B 1KV 222-K
C514	31507-127-025	ECQ-VIH334J-F3	C817	31607-401-680	CE04W TAPG 25V 100U
C515	31507-127-012	BCQB1H104J-F3	C818	31469-504-060	BCK-DNS472MEX
C516	31607-402-240	CE04W TAPG 50V 4.7M	C823	31418-767-331	CK45 B 2KV 331-K
C517	31507-127-012	BCQB1H104J-F3	C824	31609-403-140	CE04W 160V 220U-M
C518	31507-127-012	BCQB1H104J-F3	C825	31609-401-720	CE04W 25V 1000M-VENT
C519	31507-127-012	BCQB1H104J-F3	C826	31607-402-250	CE04W TAPG 50V 10M
C520	31507-127-012	BCQB1H104J-F3	C827	31418-767-331	CK45 B 2KV 331-K
C521	31507-127-012	BCQB1H104J-F3	C828	31609-401-740	CE04W 25V 2200M-VENT

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
C829	31609-401-180	CE04W 16V 1000u	RC12	31607-401-470	CE04W TAPG 16V 100M VENT
C832	31607-401-140	CE04W TAPG 6.3V 1000U-M	RC13	31507-127-012	ECQB1H104J-F3
C833	31418-767-331	CK45 B 2KV 331-K	RC14	31607-402-250	CE04W TAPG 50V 10M
C834	31609-402-110	CE04W 35V 220M-VENT	RC15	31607-401-470	CE04W TAPG 16V 100M VENT
C835	31609-403-490	CE04W 250V 10M	RC16	31607-401-470	CE04W TAPG 16V 100M VENT
C901	31407-106-250	CC45 TAPG SL 50V 331-J	RC17	31507-127-002	ECQB1H222J-F3
C902	31407-106-250	CC45 TAPG SL 50V 331-J			
C903	31407-106-250	CC45 TAPG SL 50V 331-J		SEMICONDUCTORS	
C904	31607-401-470	CE04W TAPG 16V 100M VENT	D201	32167-201-070	1N4003TAPG
C905	31418-767-102	CK45 B 2KV 102-K	D302	32167-208-570	ERB 29-04 TAPG
C906	31607-403-450	CE04W TAPG 250V 1M	D401	32167-208-510	ERB 43-04 TAPG
CS01	31607-402-210	CE04W TAPG 50V 1M	D402	32167-208-510	ERB 43-04 TAPG
CS02	31407-047-220	CC45 TAPG RH 50V 220-J	D404	32167-201-070	1N4003TAPG
CS03	31407-106-630	CC45 TAPG RH 50V 470-K	D501	32167-406-480	1N4148TAPG
CS04	31507-127-012	ECQB1H104J-F3	D502	32167-406-480	1N4148TAPG
CS05	31407-047-220	CC45 TAPG RH 50V 220-J	D503	32167-406-480	1N4148TAPG
CS06	31507-127-012	ECQB1H104J-F3	D506	32167-406-480	1N4148TAPG
CS07	31607-402-220	CE04W TAPG 50V 2.2M	D507	32167-406-480	1N4148TAPG
CS08	31507-127-012	ECQB1H104J-F3	D508	32167-406-480	1N4148TAPG
CS09	31407-106-260	CC45 TAPG RH 50V 101-J	D601	32167-406-480	1N4148TAPG
CS10	31407-047-271	CC45 TAPG RH 50V 271-J	D701	32167-406-480	1N4148TAPG
CS11	31507-127-012	ECQB1H104J-F3	D702	32167-406-480	1N4148TAPG
CS12	31407-047-221	CC45 TAPG RH 50V 221-J	D703	32167-406-480	1N4148TAPG
CS13	31407-047-221	CC45 TAPG RH 50V 221-J	D704	32167-406-480	1N4148TAPG
CS14	31507-127-012	ECQB1H104J-F3	D705	32167-406-480	1N4148TAPG
CS15	31607-401-470	CE04W TAPG 16V 100M VENT	D801	32167-208-580	ERB 12-06 TAPG
CS16	31607-402-210	CE04W TAPG 50V 1M	D802	32167-208-580	ERB 12-06 TAPG
CS17	31407-101-240	CC45 TAPG SL 50V 330-J	D803	32167-208-580	ERB 12-06 TAPG
CS18	31407-106-230	CC45 TAPG RH 50V 300-J	D804	32167-208-580	ERB 12-06 TAPG
CS19	31417-104-250	CK45 TAPG B 50V 471-K	D805	32167-208-550	ERC 24-06 TAPG
CS20	31507-127-024	BCQ-V1H 224J-F3	D806	32167-208-550	ERC 24-06 TAPG
CS21	31507-127-024	BCQ-V1H 224J-F3	D807	32167-406-480	1N4148TAPG
CS22	31407-047-221	CC45 TAPG RH 50V 221-J	D808	32167-208-550	ERC 24-06 TAPG
CS23	31407-048-820	CC45 TAPG RH 50V 820-K	D809	32167-208-550	ERC 24-06 TAPG
CS24	31407-057-330	CC45 TAPG CH 50V 330-J	D821	32167-208-550	ERC 24-06 TAPG
CV01	31829-105-610	TZ03P 450E	D822	32167-208-550	ERC 24-06 TAPG
NC001	31607-401-700	CE04W TAPG 25V 330M-M(SG)	D823	32167-208-550	ERC 24-06 TAPG
NC002	31607-401-520	CE04W TAPG 16V 68M-M	DS01	32167-101-130	1K34A (TAPG)
RC01	31507-127-000	ECQB1H102J-F3	DS02	32167-406-480	1N4148TAPG
RC02	31507-127-025	BCQ-V1H334J-F3	DZ807	32167-408-080	EQA02-06D/MTZ6.2B(TAPG)
RC03	31507-127-025	BCQ-V1H334J-F3	DZ824	32119-101-360	KA 33V(TAPG)
RC04	31417-318-103	CK45 TAPG B 50V 103-K	IC101	32119-102-250	TDA8305
RC05	31607-402-200	CE04W TAPG 50V 0.47M	IC201	32119-101-010	TBA2014
RC06	31607-402-200	CE04W TAPG 50V 0.47M	IC301	32119-102-300	KA 2131
RC07	31607-402-240	CE04W TAPG 50V 4.7M	IC501	32119-103-360	TDA3561A/N8
RC08	31507-127-012	ECQB1H104J-F3	IC601	32109-301-900	CD4066BCN
RC09	31407-105-280	CC45 TAPG CH 50V 560-J	IC602	32119-201-070	TDA1013A/N4
RC10	31607-401-450	CE04W TAPG 16V 33M	IC801	32119-401-010	TDA4601
RC11	31507-127-000	ECQB1H102J-F3	IC802	32119-901-110	MC7812C

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
IC803	32119-401-110	MC7805C	L501	32427-803-410	8.2UH-M
ICS502	32119-501-080	TDA3590A/N3	L502	32427-803-410	8.2UH-M
LD01	32309-110-230	DS2 (DL-ILR)/SL-5R	L503	32427-822-010	15UH-J TAPG
P801	32189-605-500	PTH45 A102BG180N270	L801	32429-633-090	39MHX2(U)
P802	32189-102-030	P2462-J29/J29-P190-A20	L802	32429-226-080	1UH-K
PA01	32199-411-001	GPIU721Q	L803	32429-226-160	4.7UH-K
Q101	32139-301-090	2SC 388-A	L824	32429-039-170	100UH (1A)
Q201	32137-301-720	KSC 815-Y (TAPG)	L901	32429-039-090	170UH-K
Q401	32137-301-560	KSC 2331-Y(TAPG)	LS01	32427-803-410	8.2UH-M
Q404	32159-210-003	2SD1651YD	LS02	32427-822-010	15UH-J TAPG
Q601	32137-301-720	KSC 815-Y (TAPG)	T101	32719-513-800	38.9MHZ(S-60)
Q602	32137-301-720	KSC 815-Y (TAPG)	T401	32849-070-002	7.3MH/105UH
Q603	32137-301-720	KSC 815-Y (TAPG)	T402	32779-110-011	K-10-19
Q701	32137-301-720	KSC 815-Y (TAPG)	T444	32859-136-010	PCM-2015AL(M)
Q702	32137-301-720	KSC 815-Y (TAPG)	T501	32709-024-260	4MHZ
Q703	32137-401-530	KSA 539-Y(TAPG)	T601	32729-601-020	5.5MHZ
Q801	32159-210-009	BU508AF1	T801	32899-002-405	P:160-260 S:125/18/12V
Q802	32149-401-270	KSD 288-Y	TS01	32709-024-290	4.286MHZ(7CAN)
Q901	32137-301-530	KSC 2330-0(TAPG)	TS02	32709-024-300	4.33 MHZ(7CAN)
Q902	32137-301-530	KSC 2330-0(TAPG)	X201	32469-200-000	CDL471P
Q903	32137-301-530	KSC 2330-0(TAPG)	X202	32469-107-050	DL4701F(1150R)
QS01	32137-301-720	KSC 815-Y (TAPG)			
RD02	32167-406-480	1N4148TAPG		MISCELLANEOUS	
RD03	32167-406-480	1N4148TAPG	CN601	33347-108-310	67094-003(AUTO)
RD04	32167-406-480	1N4148TAPG	CN901	33355-211-003	YCH 250-05
RD05	32167-406-480	1N4148TAPG	CN901	33058-111-040	2877/F5/400
RD06	32167-406-480	1N4148TAPG	CN902	33058-111-021	2877,3P,400
RIC01	32109-110-001	PCA84C640P/019B	CN902	33355-211-001	YCH 250-03
RIC02	32109-201-360	PCD8572	F/CLIP	33167-001-001	PFC 5000-0202
RQ01	32137-301-720	KSC 815-Y (TAPG)	FUSE	34709-084-730	FST 250V 3.15A 20MM SEMK
RQ02	32137-301-720	KSC 815-Y (TAPG)	L804	34047-019-060	3.5X6X1.0
RQ03	32137-401-530	KSA 539-Y(TAPG)	L805	34047-019-060	3.5X6X1.0
RQ04	32137-301-720	KSC 815-Y (TAPG)	P801	33053-816-580	KP-419J/LTCE-2F/8FT
RQ05	32137-401-530	KSA 539-Y(TAPG)	PERI	33134-103-030	HXC-1510-01-300A
RQ06	32137-301-720	KSC 815-Y (TAPG)	RX01	34539-001-000	10MHZ
RQ07	32137-401-530	KSA 539-Y(TAPG)	SPK	34209-169-140	5902BR 3W
RQ08	32137-301-720	KSC 815-Y (TAPG)	SW801	33529-150-150	70060-200 ME 5C TV-5
RQ09	32137-301-720	KSC 815-Y (TAPG)	TACT-2	33609-101-010	KPT 2105
RQ10	32137-301-720	KSC 815-Y (TAPG)	TACT-6	33609-101-009	KPT-2105-31
RQ11	32137-301-560	KSC 2331-Y(TAPG)	TU001	34519-970-010	BCC-2885CED(JACK)
			V999A	33359-050-010	B12-262 BASE
	COILS		X501	34539-070-210	HC-18/U,8.86723MHZ
DL501	32469-105-070	BFD-EN645A 31M/ADL-CS344	Z101	34529-440-013	OPWG1956
L102	32429-020-010	0.5UH-K	Z201	34529-460-010	TPS5.5MW
L103	32429-904-580	1.5UH-K	Z601	34527-460-003	SFE5.5MB TF21
L200	32427-805-110	1UH-M	Z603	34529-421-010	TPS 4.5MC
L201	32427-803-130	10UH-K TAPG			
L403	32429-805-980	6800UH-K			
L404	32449-712-010	K-10/195UH			

Loc No	Supplier Part No.	Description	Loc No	Supplier Part No.	Description
2 . ASSY - CRT					
V999	32019-400-015	51GGB91X			
L406	32439-090-010	DIE-1992GL			
L802	32479-029-180	28RT130L1280			
V999M	34099-023-010	JH-8210			
SP-DY	36814-101-911	NEOPRENE VO BLK			
3 . ASSY - TRANSMITTER					
*3F14-00009-103 TMO9,RM109,29,BLK,NO					
PCB	33004-144-721	54XD143X1.0T <S.N.A>			
RT06	31018-177-101	RD 1/8T 100-J			
RT04	31018-177-101	RD 1/8T 100-J			
RT02	31018-177-103	RD 1/8T 10K-J			
RT03	31018-177-109	RD 1/8T 1-J			
RT05	31018-177-332	RD 1/8T 3.3K-J			
CT02	31507-127-003	ECQB1H332J-F3			
CT01	31507-127-003	ECQB1H332J-F3			
CT03	31607-401-460	CE04W TAPG 16V 47M			
ICT01	32109-401-004	SAA3027P			
QT01	32137-301-720	KSC 815-Y (TAPG)			
QT02	32137-401-530	KSA 539-Y(TAPG)			
DT02	32167-406-480	1N4148TAPG			
DT02	32167-406-480	1N4148TAPG			
DT03	32309-101-090	CL-2(F)/SSIR-5D			
DT01	32309-101-090	CL-2(F)/SSIR-5D			
DT04	32309-101-090	CL-2(F)/SSIR-5D			
DT02	32309-101-090	CL-2(F)/SSIR-5D			
LT01	32427-904-914	EL 0607RA-272J			

P58SC (C4)
PAL/SECAM-B.G(D.K OPTION) RM109 REMOTE SYSTEM
(38104-182-810)



DIFFERENT PARTS
FOR
20 INCH AND 14 INCH

LOCATION	14 INCH	20 INCH
NR002	1/2W 1K5	1/2W 1K5
NR001	25V 330µF	25V 330µF
NR002	16V 68µF	16V 68µF
RB14	3K3	3K3
R210	133K-F(1/2W)	133K-F(1/2W)
C419	200V 364	200V 434
L401	DS48-157µH	DS48-157µH
L404	DS48-157µH	DS48-157µH
T402	K-20-14	K-20-14
Q402	2SD1650	2SD1651
T444	FCM1415AL	FCM-2015AL
V999	3720B22	A34EAC00X

DIFFERENT PART
FOR SOFT-TOUCH AND REMCON MODEL

LOCATION	SOFT-TOUCH	REMCON
SW102	MSA-2272	
NR002	1/2W 1K	
PA01	OPIU721Q	
RC16	16V 100µF	
RR58	1/8W 47	
RR59	1/8W 22K	
RR32	1/2W 1K	
RR31	1/8W 33K	
RQ08	CB15-Y	

DIFFERENT PARTS FOR
PAL-B/G AND SECAM-B/G/D/K

LOCATION	PAL-B/G	SECAM-B/G	SECAM-B/G/D/K
RS17	470	820	820
RS18	270	110	110
RP501	820		
RP502	1K		
CP01	103		

CAPACITOR

TYPE	MARK
Ceramic	No Mark
Polyester	P
Tantalum	T
Metal Polyester	MP
Polypropylene	P.P
Polyester/Polypro	DSR
Chemical Electrolytic	
Chemical Non-Polar	

RESISTOR

TYPE	MARK
Carbon Composition	C
Oxide Metal Film	M
Metal Film	RM
Cement	R-C
Variable Resistor	
Positive Resistor	

